PRIMERGY BX600

You will find updates and new components in the chapter 'Updates' positioned after the index.

Contents

General information **02-BX600-5**
The Blade Server Concept 02-BX600-5
Features 02-BX600-7
Server Blade Features 02-BX600-7
Switch Blade Features 02-BX600-9
Management Blade Features 02-BX600-9
Other Boards: Features 02-BX600-10
Product designations 02-BX600-13
System allocation 02-BX600-19
Service 02-BX600-19
Technical data 02-BX600-20

Installation and initial operation **02-BX600-23**
Installation 02-BX600-23
Preparation 02-BX600-23
Connecting devices to the server 02-BX600-25
– Connectors on the server blade / breakout cable 02-BX600-25
– Connectors on the server rear 02-BX600-26
Connecting the server to the mains voltage 02-BX600-28
Initial operation and operating 02-BX600-29
Controls and indicators on the server front 02-BX600-29
– Controls and indicators on the front bezel 02-BX600-29
– Controls and indicators on the server blade panel 02-BX600-31
Controls and indicators on the server rear 02-BX600-33
– Controls and indicators on the PS/2-ID board 02-BX600-33
– Controls and indicators on the PSU 02-BX600-34
Switching the server on and off 02-BX600-37
Server Blade Setup Using ServerStart 02-BX600-39
Reference installation 02-BX600-39
– Hardware preparation 02-BX600-39
– Software preparation 02-BX600-41
Settings 02-BX600-43

The Switch Blade 02-BX600-43
– The control and connection panel 02-BX600-44
The Fibre Channel pass-thru Blade 02-BX600-46
– Control and connection panel 02-BX600-47
– Fibre Channel SFP module 02-BX600-48
The Management Blade 02-BX600-50
– Management blade control and connection panel 02-BX600-51
– Jumper Settings 02-BX600-53
– Temperature/System monitoring 02-BX600-54
– Possible screen resolutions 02-BX600-55
– Management Blade Initial Configuration 02-BX600-55
The SCSI Blade 02-BX600-60
Spare Parts and Add-On Modules 02-BX600-61

Diagnostics 02-BX600-63
Drive indicators 02-BX600-63
Server Blade Diagnostics LEDs 02-BX600-64
Troubleshooting 02-BX600-65

Removal and Installation Routines 02-BX600-71
Preparation 02-BX600-71
The Server Blade 02-BX600-71
Removing or Installing Server Blade Dummy Modules 02-BX600-71
Installing or Removing Server Blades 02-BX600-73
Opening a Server Blade 02-BX600-76
Hard Disk Subsystem on the Server Blade 02-BX600-77
– Installing/replacing hard disk drives 02-BX600-77
Exchangeable Drives 02-BX600-80
Main Memory 02-BX600-81
– Installing memory modules 02-BX600-81
– Removing memory modules 02-BX600-84
Processors 02-BX600-84
Replacing the Server Blade Lithium Battery 02-BX600-88
Front PCI Expansion Module 02-BX600-90
Fibre Channel Daughter Card 02-BX600-98
Upgrading the Server Blade Firmware (BIOS and BMC) . . 02-BX600-100
Recovering the Server Blade BIOS 02-BX600-102
The Switch Blade 02-BX600-104
Removing/installing Switch Blade Dummy Modules 02-BX600-104

Removing and Installing Switch Blades 02-BX600-106
Upgrading the Switch Blade Firmware 02-BX600-108
The Fibre Channel Pass-Thru Blade 02-BX600-110
Exchanging an FC pass-thru Blade 02-BX600-110
The Management Blade 02-BX600-115
Removing or Installing Management Blades 02-BX600-115
Replacing the Management Blade Lithium Battery 02-BX600-117
Upgrading the Management Blade Firmware 02-BX600-118
– Upgrading the BMC via the LAN 02-BX600-118
– Rebuilding the default settings 02-BX600-120
– Emergency Flash of the Management Blade Firmware 02-BX600-123
The SCSI Blade 02-BX600-126
Removing and Installing the SCSI Blade 02-BX600-126
Power Supply Units 02-BX600-128
Removing and Installing Power Supply Units 02-BX600-128
The Midplane 02-BX600-131
Replacing or Installing the Midplane 02-BX600-131
Replacing the Front Control Kit 02-BX600-135
Other Boards 02-BX600-139
Removing or Installing the KVM Blade 02-BX600-139
System Fans 02-BX600-141
Replacing the Fan Unit 02-BX600-141
Replacing a Fan in the Unit 02-BX600-143
Replacing the PSU Fans 02-BX600-144
Installing the System in the Rack 02-BX600-145
Mounting the Assembly Kit 02-BX600-148
Mounting/Removing the System 02-BX600-150

Overviews, lists 02-BX600-153
Spare parts 02-BX600-153
Glossary 02-BX600-153

Index 02-BX600-155

Updates 02-BX600-157

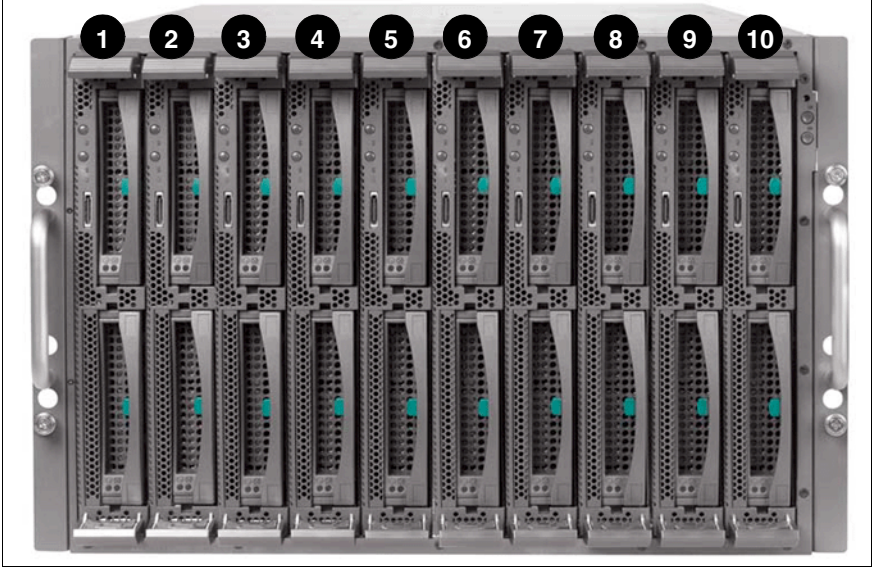
General information

The Blade Server Concept

The Blade Server System concept is a modular concept which separates the I/O functionality (switch blade, SCSI blade, FC pass-thru blade) from the CPU (server blade). Two management blades with an integrated management solution for complete redundant remote administration of the system are also implemented. Fault tolerance on a complete blade system level is also maintained by using 3+1 redundant, hot-swap power supply units (PSU), as well as hot-swap, redundant fans.

A fully redundant, hot-swap design of the server blade ensures that blades can be added or exchanged without interruption of service. The compact design allows up to 10 server blades to be installed in a chassis of only 7 HU (height units) in a 19-inch rack.

The figure below shows the front of the BX600 system unit and the numbering of the server blade slots.



The server blade combines all the core components of a traditional server. It contains one or two CPUs, the main memory and one or two Ultra320 SCSI hard disk drives on which the operating system and application programs are installed. The server blade comes with extensive I/O capabilities, as there are two Gigabit Ethernet ports, two optional 2-Gigabit Fibre Channel ports and one optional PCI expansion slot. The VGA and USB connectors at the front of each server blade can be used for local, on-site maintenance.

The PRIMERGY BX600 chassis provides redundant and hot-pluggable infrastructure modules that are connected to the server blades by means of a passive midplane. The management blades provide the remote management interface. The Gigabit Ethernet switch blades connect the Gigabit Ethernet ports of the server blades to the LAN. The Fibre Channel pass-thru blades are responsible for connection to a SAN, using the optional FC module for each server blade. The infrastructure is rounded off by a KVM switch and an SCSI module for connecting external backup devices.

The two management blades have separate LAN connections for maintaining accessibility to the system even when the standard traffic network connections are down.

Application areas

As economical, ultra-compact systems, the mono or dual CPU server blades are ideal for use by company data centers and Internet service providers. They are perfectly suited for large application servers, terminal servers for CPU-intensive applications, and DBMS servers.

Other common application areas:

- Internet and caching services (Microsoft IIS and Linux Apache)
- Web cache (Inktomi traffic server, Microsoft ISA server or Volera)
- Streaming media
- DNS server, VPN gateway, SSL/LB, firewall intrusion protection
- IP load balancing, clustering (F5 BIG-IP, Microsoft NLBS, Linux LVS)
- Terminal server (Citrix)
- Communications or front-end applications

High level of availability and failure protection

The PRIMERGY BX600 blade server system offers a high level of reliability and availability through highly developed hardware and software components:

– When memory data is accessed, 1-bit errors in the main memory are recognized and automatically corrected with the ECC (Error Correcting Code) method.

– ASR&R (Automatic Server Reconfiguration and Restart) restarts the system in the case of an error and automatically “hides” the defective system components.

– The PDA (Prefailure Detection and Analyzing) technology from Fujitsu Siemens Computers analyzes and monitors all components relevant for system reliability.

– The on-board SCSI-RAID controllers with HostRAID support (RAID-Levels 0, 1 and 10) increase system availability.

– The hot-swappable components provide additional failure protection. Failure protection on a complete blade system is ensured by up to four redundant, hot-swap power supply units (PSU), as well as hot-swap, redundant fans.

Features

Server Blade Features

A *server blade* combines the core components of a traditional server on a hot-swappable system board that can accommodate one or two Intel® Xeon™ processors, one or two SCSI hard disk drives, and up to 12 GB of main memory.

Processors	One or two Intel® Xeon™ processors with 2.8 GHz to 3.2 GHz and 1 MB third-level cache in up to 10 hot-swappable mono- or dual-CPU server blades ensure high data throughput and system performance.

Memory	There are three memory banks available on each server blade. These can be populated with 512 MB, 1 GB, 2 GB or 4 memory each with two DDR SDRAM modules. The maximum memory expansion is 12 GB. ECC with memory scrubbing function and hot-spare memory bank is standard.
Peripheral interfaces	Special connector for 2xUSB and VGA port
LAN availability	Each server blade has four Gigabit LAN channels. Usually two channels are connected with the switch blades. Each switch blade has ten 1-Gigabit downlink ports to connect and three uplink ports for 10/100/1000 Base TX.
Fibre Channel	Each server blade can be equipped with two 2 Gbit/sec Fibre Channel I/O ports. For this purpose an FC daughter board must be installed in the server blade. To use Fibre Channel functionality at least one Fibre Channel pass-thru blade is also required in the system.
PCI expansion module	A server blade can be optionally provided with a proprietary expansion module for a standard full height half length PCI card via a PCI riser card. This PCI module will occupy the space of the internal SCSI hard disk module on the left side of the server blade.
Graphics controller	Onboard video controller ATI Rage XL 8 MB onboard
Storage	Each server blade can accommodate two 3.5“ SCA2 SCSI hard disk drives (HDD) with 18, 36, 73 or 146 GB. The maximum hard disk capacity on one server blade is 292 (2x146) GB in a RAID 0 configuration. Usually two disks are mirrored in a RAID 1 configuration. Each server blade is equipped with a two-channel Ultra 320 SCSI onboard controller and embedded HostRAID.

Security functions	– Simple error detection and correction in the main memory with ECC (only for memory modules with ECC) – System, setup and keyboard password – Write protection for the floppy disk drive
Notification	System status, selection notification, HDD activity, LAN connection status
BIOS	AMI BIOS, 4-Mbit boot block flash memory

Switch Blade Features

All incoming and outgoing data traffic is transmitted via LAN (TCP/IP protocol, Gigabit Ethernet). Up to two redundant *switch blades* provide high-speed LAN access via multiple Gigabit interfaces. Each *switch blade* offers ten downlink ports to the *server blades* and three RJ45 uplink ports to level-3 switches. These LAN connections provide the I/O functionality for the *server blade* besides the optional Fibre Channel connections (see page 02-BX600-43).

Management Blade Features

Two redundant *management blades* allow the complete remote administration of the whole server system. Separate LAN connections are provided to maintain accessibility to the system even if the standard traffic network connections are down (see page 02-BX600-50).

Other Boards: Features

KVM blade	The rear KVM blade provides the VGA, PS2 keyboard and mouse interface in the KVM connector for local administration of the server blades. To connect these devices a special cable is required, see page 02-BX600-27. To provide information as to which server blade is connected to the KVM blade, the KVM blade also has an identify button and an LED (see page 02-BX600-31).
Front control board	The *front control board* is included in the server front and contains front indicators and controls. It also contains an identify button and LED on the server front that indicates if the system has been selected for identification or remote administration (see page 02-BX600-31).
Power distribution board (PDB)	The *power distribution board* is the bridge that provides interconnection between the redundant power supply units and the *midplane*. It divides up the 12 V output into 10 branches for *server blades* and 6 branches for *management blades* and *switch blades and FC pass-thru blades*.
Midplane board	The *midplane board* provides internal interconnection between all BX600 blade boards.
Docking board	The *docking board* connects the *front control board* (containing indicators and controls on the front bezel) to the *midplane* (see page 02-BX600-131).

Power supply

Up to four hot-swappable power supply units which adjust automatically to any power voltage in the range 100 V - 127V or 200 V - 240 V in a 3+1 redundant power supply configuration ensure enough power for the system. If one of these units fails, the others ensure that operation continues unimpaired. The defective power supply unit can be replaced during operation (hot-swap).

Ventilation

The system is kept cool by three fans in each power supply unit and four single fans, with two of them mounted one after the other in a housing in the rear chassis. This configuration is redundant and hot-swappable.

Server management

With *ServerView* and PDA technology, Fujitsu Siemens Computers offers a complete server management solution. *ServerView* allows the management of all PRIMERGY servers in the network using a single central console, normally a standard PC running the Microsoft Windows operating system.

The following functions are supported:

– Temperature monitoring of the CPU and housing
– Power monitoring
– Timer-controlled switch-on
– Watchdog timer for ASR&R (Automatic Server Reconfiguration and Restart) in the event of failure of memory modules or processors
– Watchdog timer for operating system monitoring and application monitoring
– Detailed status and error reports for bus systems, processors and main memory
– Error message logging in non-volatile NVRAM

By controlling both server components and operational status, a substantial increase in reliability is achieved. In addition to *server management*, *version management* offers a variety of powerful maintenance tools:

Inventory View	Provides information on the hardware configuration of a server and its system-related software components.
Export Manager	The inventory files of several servers can be exported into Excel, Access, or an SQL database.
Download Manager	(contained in *ServerView Web Extension* as of V2.0) Enables the download of system-related software components (firmware, drivers) from the internet (FSC server) or from the support CD-ROM.
Global Flash Tool	Enables the updating of firmware components.
Archive Manager	Provides an overview of archive data.

For more information on the *ServerView* server management, see the associated documentation on the *ServerBooks* CD-ROM.

ServerStart

ServerStart is a powerful tool for setting up your new PRIMERGY server. *ServerStart* allows you to configure your server and install the operating system and additional components quickly and easily. You can make use of *ServerStart* when switching on the operating system and make adjustments to the system settings later.

Benefits of ServerStart

– Automatically detects and configures your server hardware and disk arrays

– Helps you install all leading server operating systems (for example, Microsoft Windows 2000/2003, Linux)

– Create configuration files for the unattended installation of several PRIMERGY servers with similar hardware configurations

– Install drivers, service packs and applications, including *ServerView* (see section “Installing ServerView“ on page 27)

> **i** Which software can be installed depends on the hardware configuration of your server. This configuration is automatically detected.

– Remotely access configuration files and installation packages on file servers or shared network drives

– Remotely install PRIMERGY server systems that are bootable via PXE (as of version 5.208)

Service and support

PRIMERGY servers are service-friendly and modular, thus allowing quick and simple maintenance.

ServerBooks With *ServerBooks* you have all current manuals for the PRIMERGY server family on one data carrier. Thanks to the newly designed user interface you can quickly and conveniently find the information you need.

ServerSupport The *ServerSupport* CD-ROM contains up-to-date drivers and firmware. You will also find these files in the support area of the Fujitsu Siemens internet offers. Within the context of remote management, the *ServerSupport* CD-ROM allows the updating of system-related server components with the help of the *Download Manager* and the *Global Flash Tool*.

Product designations

The sales information contained in this service manual is provided for service and must not be used as sales documentation. Some products listed in the overview may no longer be available.

Product	**Base units**
S26361-K863-V101	**System unit including**
	PRIMGERY BX600 7HU casing
	Rack mounting kit for PRIMERGY 19-inch PRIMECENTER rack, FJ new rack and 19-inch 3rd-party racks (e.g. Rittal) – 1 pair of carrier rails – 1 bracket for DataCenter rack

Product	Base units
	2 hot-plug power supplies 1200W at 230V (850W at 110V) **All redundant hot-plug fans on the rear** – 2 fan modules with 2 fans each (2+2 redundancy) and 3 fans in every power supply **Drives / bays / slots** – 10 empty slots for hot-plug dual server blades in the front – 1 empty slot for hot-plug Gbit Ethernet switch blade in the rear – 2 empty slots for Fibre Channel pass-thru blades in the rear – 2 empty slots for additional hot-plug PSUs in the rear 2 management blades External SCSI module with 2 VHDCI68 connectors (UHD68) KVM switch (keyboard, video and mouse switch) 1 Gbit Ethernet switch blade
	External interfaces:
	– 1x RS-232-C (serial, 9-pin) per management blade (2 total) – 1x LAN RJ45 per management blade (2 total) – 3x LAN RJ45 per Gbit Ethernet switch blade (max. 6 total) – 10x FC per Fibre Channel pass-thru blade (max. 20 total) – 2x SCSI UHD connectors – 1x keyboard (PS/2) on the KVM switch – 1x mouse (PS/2) on the KVM switch } via special cable – 1x VGA (15 pin) on the KVM switch – 1x VGA and 2x USB 1.1 in the front of each server blade via special cable
	Cables: – 1x special cable with 2x USB for external CD/FD and 1x VGA for server blade front connection. – 1x special cable with 2x PS/2 and 1x VGA for KVM switch – 2x power cable for internal rack connection
	Software: – ServerStart (for remote installation) – ServerView (for blade server monitoring) – RemoteView FrontEnd (for remote management) on CD

Product	Base units: server blades
	Features: – Dual Xeon processor support – 6 memory slots (to be filled in pairs), organized in 3 banks for max. 12 GB DDR SDRAM – 2x LAN onboard 10/100/1000TX (Broadcom 5703-compatible) – Dual SCSI HostRAID controller onboard (Adaptec 7902W) – 2 bays for 3.5" SCSI hard disk modules (hot-plug) – Graphics controller ATI Rage XL 8 MB onboard – Special connector (Y-cable) for the connection from 2x USB and 1x VGA interface.
S26361-K921-V151	*Server blade:* Dual CPU, Xeon 2.8GHz / 512KB Second Level Cache (SLC), 512 MB SDRAM
S26361-K921-V111	*Server blade:* Dual CPU, Xeon 2.8GHz / 512KB Third Level Cache (TLC), 1GB SDRAM
S26361-K921-V112	*Server blade:* Dual CPU, Xeon 3.06GHz /1MB TLC, 1GB SDRAM
S26361-K921-V122	*Server blade:* Dual CPU, Xeon 3.06GHz /1MB TLC, 2GB SDRAM
S26361-K921-V113	*Server blade:* Dual CPU, Xeon 3.2GHz /1MB TLC, 1GB SDRAM
S26361-K921-V123	*Server blade:* Dual CPU, Xeon 3.2GHz /1MB TLC, 2GB SDRAM
S26361-K863-B8	Rack integration kit for all PRIMERGY 19-inch racks including: – carrier rails – brackets for Datacenter rack
S26361-F2749-E1	„Installation by factory“: Service for server blade installation in the system unit, whereby the BX600 blade server is delivered completely premounted and tested with server blades integrated. Min. 1x per system unit, max. 10x per system unit, max. 1x per server blade.
S26361-F2749-E2	Server blade individually packed /delivered, not built into a BX600 blade server, but separately tested and delivered. Max. 1x per server blade.

Product	Processors
	There are two processor slots available. One slot is occupied by the basic unit. These can be populated with Intel Xeon (DP) processors. It is possible to upgrade the second processor later on. Two processors with different clock frequencies are not possible. A multiprocessor operating system is required for a dual-processor system.
S26361-F2549-E301	Xeon 2.80 GHz, 512 KB SLC, heat sink
S26361-F2549-E302	Xeon 3.06 GHz, 512 KB SLC, 1MB TLC, heat sink
S26361-F2549-E303	Xeon 3.2 GHz, 512 KB SLC, 1MB TLC, heat sink

Product	Conversions
S26113-F479-E50	Power supply unit, 1200 W (at 220 V) or 850 W (at 110 V), incl. power cord for rack, 4m length
	PSU dummy module

Product	Main memory
	– A *server blade* offers 2 memory expansion slots. – These accept 512MB, 1GB, 2GB and 4GB DDR SDRAM memory. – The maximum main memory capacity is 12 GB **i** ECC with memory scrubbing function, chipkill and hot-spare memory bank support is standard on the PRIMERGY BX600 server blades.
S26361-F2762-E523	Main memory 512 MB, PC2100-registered DDR RAM with chipkill support, consisting of 2 modules, occupies one bank, max. 3 per server blade
S26361-F2762-E524	Main memory 1 GB, PC2100-registered DDR RAM with chipkill support, consisting of 2 modules, occupies one bank, max. 3 per server blade
S26361-F2762-E525	Main memory 2 GB, PC2100-registered DDR RAM with chipkill support, consisting of 2 modules, occupies one bank, max. 3 per server blade
S26361-F2762-E526	Main memory 4 GB, PC2100-registered DDR RAM with chipkill support, consisting of 2 modules, occupies one bank, max. 3 per server blade

Product	Hard disk drives
	– The 80-pin SCA hard disks are plugged into a 1-channel backplane which is directly connected. – Hot replace is possible with onboard Adaptec 7902 using the HostRAID functionality. **i** Only one SCSI hard disk can be chosen if the lower SCSI hard disk bay is used for the PCI slot module.
S26361-F2764-E136	36 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade
S26361-F2764-E173	73 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade
S26361-F2764-E114	146 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade
S26361-F2764-E518	18 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade
S26361-F2764-E536	36 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade
S26361-F2764-E573	73 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot-plug/hot-replace tray, max. 2 per server blade

Product	I/O module
	– Each server blade has one optional slot for an on-board Fibre Channel I/O module. **i** This functionality requires a Fibre Channel pass-thru blade in the system unit.
S26361-F3023-E1	2Gbit/s FC I/O module with ISP2312 Dual Channel, 2Gbit/s PCI-X 133MHz, 3.3V signaling; max. 1x per server blade

Product	PCI options
	– One PCI slot is available instead of the lower hard disk drive slot. – The PCI slot is a half-length, full-height slot. The slot provides PCI-X 64bit/100MHz. **i** With this solution only one internal SCSI hard disk module per server blade is possible.

Product	PCI options
S26361-F3022-E1	PCI slot carrier module, max. 1 per server blade
S26361-F3011-E1	Gigabit Ethernet Controller dual 1000TX, Intel Pro/1000MT dual server adapter, Adapter Teaming Support, PCI-X (PCI64/66), min. 163 mm, ext.: for RJ45 plug, max. 1 per server blade

Product	Accessible drives / external devices
	The following device can be connected to a *server blade* via a breakout cable.
S26361-F2609-L200	Traveller II DVD-ROM drive, USB cable and battery included
S26391-F264-L225	USB floppy disk drive
S26381-K317-L100	USB optical wheel mouse
S26381-K280-V220	Fujitsu Siemens Computers USB keyboard (KBPC USB D)

Product	Server management and deployment software
U15000-C198	RemoteDeploy V2.0 to initialize, install and clone the software installation of blade servers. Initial installation by ServerStart. CD-ROM and manual with basic licence (is one license required per server blade)
U15000-C182	RemoteDeploy upgrade from V1.x to V2.0. A license for RemoteDeploy V1.x is required, one upgrade license is required for all the blades of one blade server cabinet.
U15000-C181	RemoteDeploy V2.0; one expansion license without CD, without manual

System allocation

Support for the PRIMERGY BX600 server is guaranteed as of the following software and firmware versions:

ServerView	Version 3.5
ServerStart	Version 5.404
ServerBooks	Version 5.404
ServerSupport	Version 5.404

Operating systems

Manufacturer	**Operating system**
Microsoft	Windows 2000 Server
	Windows 2000 Advanced Server
	Windows 2003 Server Standard Edition
RedHat	Linux 9 Linux AS 2.1
SuSE	Linux 9/8 Linux ES 8

Service

The type label can be found on the left side of the server.

Technical data

Electrical data (server with three power supply units with 1200 W)

Rated voltage range	100 -127 V / 200 - 240 V
Rated frequency	50 Hz - 60 Hz
Max. rated current	100 -127 V / 11 A 200 V - 240 V / 6.5 A
Max. active power	100 -127 V / 2550 W 200 V - 240 V / 3600 W
Max. apparent power	3712 VA (230V) 2629 VA (110V)
Thermal dissipation	12960 kJ/h
Protection class	I

National and international standards

Product safety and ergonomics	IEC 60950 / EN 60950 UL 1950 3rd Edition, CSA 22.2 No. 950
Electromagnetic compatibility	FCC class A
Emitted interference	EN 55022 class A
Harmonic current	EN 61000-3-2
Noise immunity	EN 55024
CE label according to EU directives	Low-Voltage Directive 73/23/EEC Electromagnetic Compatibility 89/336/EEC

Approvals

Product safety	
Global	CB
Europe	ENEC
Germany	GS
USA/Canada	CSA_{US} / CSA_{C}
Japan	VCCI

Dimensions

Width	446 mm
Installation depth	740 mm
Height	307 mm or 7HU

Weight

Max. 130 kg (fully assembled)
Min. 39 kg (server blades, PSU's, fan modules, switch blades an FC pass-thru blades removed)

Ventilation clearance

To ensure sufficient ventilation of the system, a minimum clearance of 200 mm must be provided at the front and rear of the server.

Environmental conditions

Environment class 3K2 Environment class 2K2	DIN IEC 721 section 3-3 DIN IEC 721section 3-2
Temperature: Operation (3K2) Transport (2K2)	 5 °C .... 35 °C -20 °C .... 60 °C
Relative humidity	10%...85%

If the server is brought in from a cold environment, condensation may form inside of the device. To avoid damaging the server, wait until the device is absolutely dry before unpacking and setting it up.

Noise level

Sound power level L_{WAd} (ISO 7779)	7.8 BA
Sound pressure level at bystander position L_{pAm} (ISO 9296)	≤ 59 dB(A) (in the standard configuration

Installation and initial operation

Installation

Preparation

Unpacking the server

- Only transport the server in its original packaging or other suitable protective packaging. Do not unpack the server until it is at its installation location.

  Keep the original packaging in case you want to transport the server again.

- Inspect the package contents for any visible damage that may have occurred during shipping. Check whether the delivery matches the details in the delivery note. If anything is incorrect, please notify your supplier immediately.
- If the server is brought in from a cold environment, condensation may form inside of the device. To avoid damaging the server, wait until the device is completely dry before unpacking and setting it up.
- If you need to lift or transport the system, ask a second person to help you.
- Never lift the server using the handles on the rear.
- **Before lifting the server into the rack, remove server blades, fan units and power supplies from the system unit to reduce weight.**
- To lift the server, use the handles on the front and the fold-out handles on the long sides of the chassis.

Installation steps

- Mounting the assembly kit and the server in the rack as described on page 02-BX600-148 (see order lists for location diagram prepared with *Rack Architect*).
- Connecting the devices to the server in accordance with the rack configuration (see page 02-BX600-25).
- Connecting the server to the mains voltage (see page 02-BX600-28).

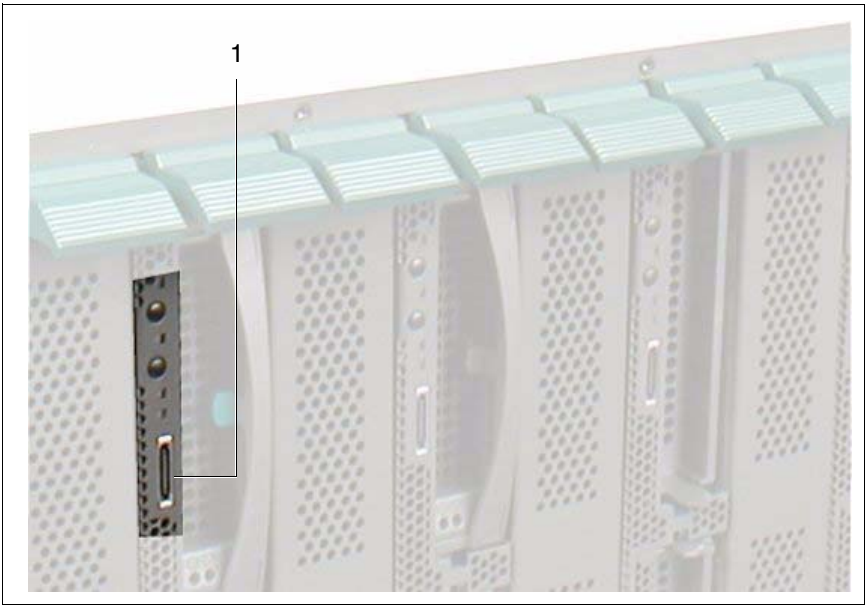
Connecting devices to the server

The standard ports are indicated by symbols and color coding.

- Read the appropriate documentation before connecting a peripheral device.
- Do not connect or disconnect any current-bearing power cables during a thunderstorm.
- Connect and disconnect the cables in the order described in the technical manual.

Special software drivers may be necessary for some connected peripherals (see the documentation for the connected peripheral device).

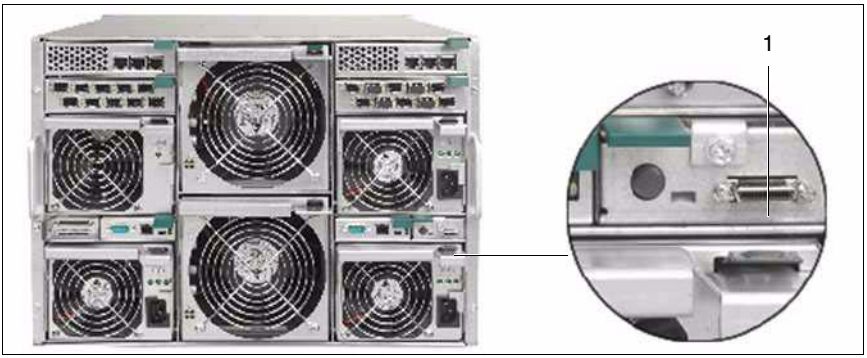
Connectors on the server blade / breakout cable



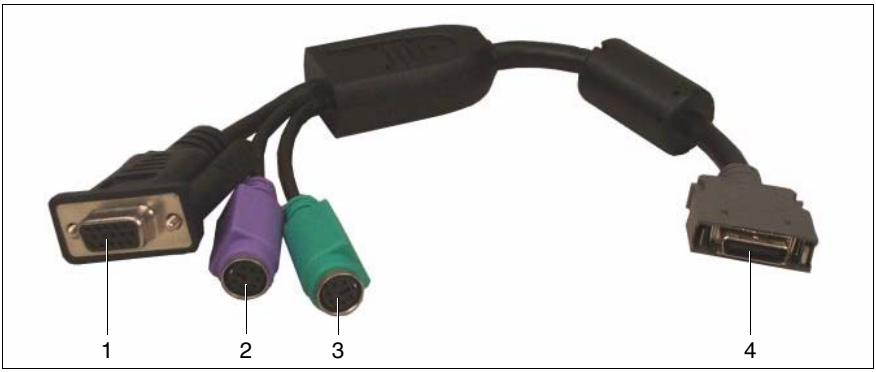
1	**Connector for USB/VGA breakout cable**

1	**Dual USB breakout cable** Adds dual USB connectors to the desired *server blade*
2	**VGA breakout cable** Adds a D-Sub VGA connector to the desired *server blade*
3	**Expansion plate connector** Expansion plate connector

Connectors on the server rear



1	**KVM connector**

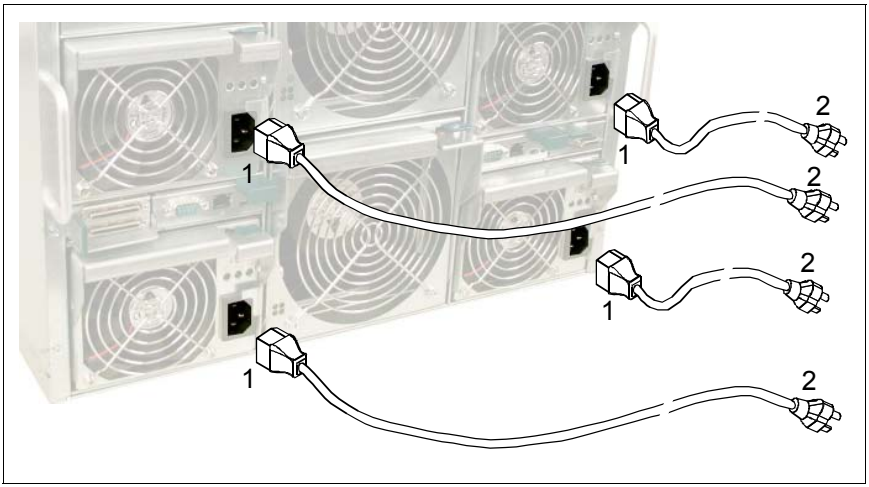


1	**VGA connector** D-Sub connector (blue)
2	**Keyboard connector** Standard PS/2 serial keyboard connector (purple)
3	**Mouse connector** Standard PS/2 serial mouse connector (green)
4	**KVM connector** KVM connector

PS/2 devices and VGA output connected via the rear KVM blade can be assigned by pressing the KVM button on the front panel of the desired *server blade* (see page 02-BX600-31).

Connecting the server to the mains voltage

There are slots for four hot-swappable power supply units on the rear of the blade server system. Each of the power supply units provide 1200W at 220V (850W at 110V). The base system is equipped with two power supply units. If more than 5 server blades are installed, the 3rd power supply unit must also be installed. To obtain power supply redundancy with more then five server blades four power supply units must be installed.



- Connect one power cord to each power supply unit of the server (1). Connect the other ends of the power cords to the socket strip of the rack (2) (see assembly instructions on the *ServerBooks* CD-ROM, „Components“).

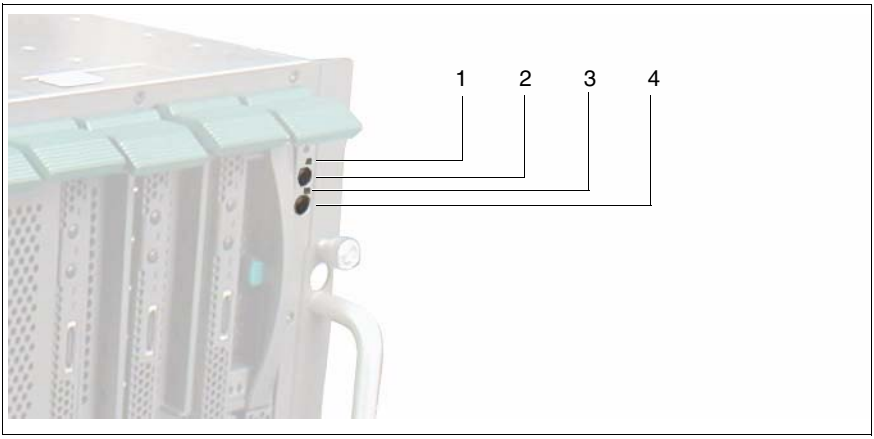
Please make sure that each of the power supply units is connected to a different phase. This will provide you with additional phase redundancy for high availability configurations. If one phase has failed, the power supply units connected to the other phases keep active. You can get full phase redundancy with up to three power supply units. With four power supply units, two of them are to be connected to one phase.

If up to 5 server blades are installed, make sure that at least two power supply units are installed! With more than 5 server blades, at least three power supply units must be installed!

Initial operation and operating

Controls and indicators on the server front

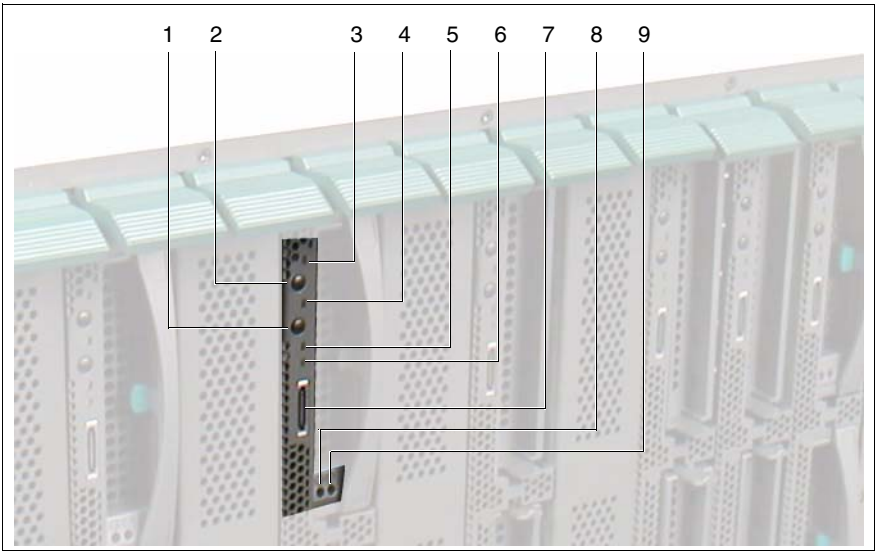
Controls and indicators on the front bezel



1	**Power indicator (bicolor LED)** Lights amber: System is ready for powering ON (5 V standby power present). Lights green: System is switched ON.
2	**System power ON/OFF button** When the system is switched OFF, pressing the power button for 2 seconds will switch it ON. When the system is operating and the button is kept pressed for 4 seconds, the system will be gracefully shut down. When the system is switched ON, pressing the power button for 10 seconds will switch it OFF.

3	**Front identify/Fault indicator (amber LED)**	
	Unlit:	The system is normal and not highlighted. If power indicator LED lights green: System is switched ON (5 V standby power present).
	Lights amber:	This system has been selected by pressing the front or rear identify button. To deactivate, press one of the buttons again. The LED can also be selected via CLI.
	Blinks amber:	The system is directly controlled via the management blade user interface. or SUM error: A malfunction has occurred in the system.
4	**Front identify button** Pressing this button lights up the integrated front identify indicator. The front and rear identify indicators will be synchronized.	

Controls and indicators on the server blade panel

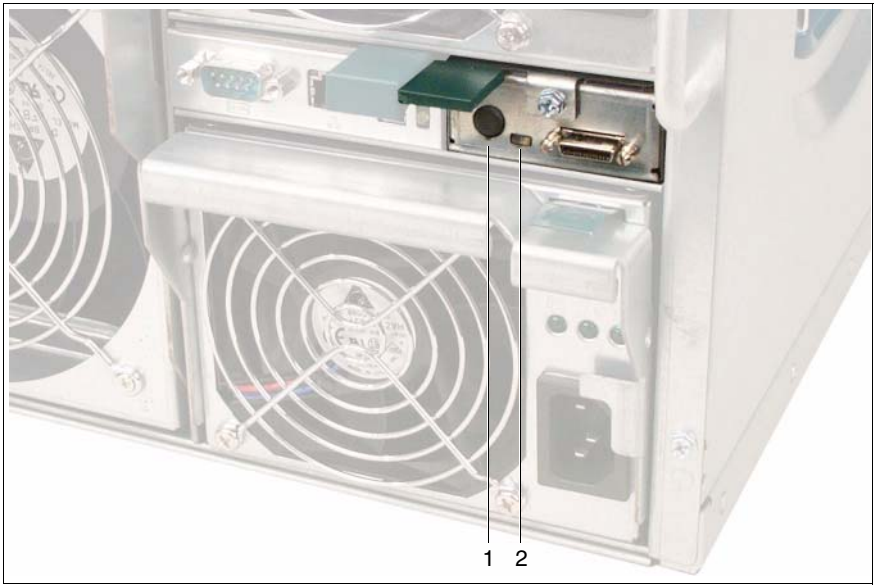


1	**KVM (keyboard/video/mouse) button** Pressing the KVM button switches the KVM to this server blade.
2	**Power button** fully compatible with Advanced Configuration Power Interface (ACPI) When the server blade is switched OFF and you press the power button, a *power_up* command is sent to the management blade and the server blade will be switched ON. When the server blade is switched ON and the power button is kept pressed for 4 seconds, the server blade will be switched OFF and a *power_off* notification command will be sent to the management blade (power button override). When the server blade is switched ON and the power button is kept pressed for 10 seconds, the server blade will be switched OFF.
3	**Power/Select indicator (green LED)** Dark: System is switched OFF, no 5 V standby power present or this server blade is not correctly inserted. Lights green: Server blade is switched ON. Blinks green: Server blade is switched ON and has been selected for identification or remote administration or this blade has failed.

4	**KVM/MP fail indicator (green LED)** Dark: KVM is not selected from this server blade. Lights green: KVM is selected from this server blade. Blinks green KVM is selected from this server blade and this blade is disabled due to power budget. If there is not enough power available for the whole system due to a PSU failure, the management blade will shut down as many server blades as required to compensate for the reduced power, starting with the server blade in slot 10 and continuing in reverse slot numbering order.
5	**Fibre Channel I/O status (green LED)** Dark: System is switched OFF or loss of signal synchronization Green: System is switched ON and online
6	**NIC indicator (green LED)** Dark: System or server blade is switched OFF and LAN interface not working. Lights green: LAN is connected. Blinks green: LAN is active.
7	**USB/VGA connector** Adapter connector for two USB ports for external CD/FD drives and one VGA port. A special cable is required! (see page 02-BX600-26)
8	**HDD access (green LED)** Unlit: Hard disk drive is inactive. Lights green: Hard disk drive is active.
9	**HDD indicator (amber LED)** Unlit: System or server blade is powered OFF and hard disk drive inactive. Lights amber: The server blade is switched ON and the hard disk drive is faulty.

Controls and indicators on the server rear

Controls and indicators on the PS/2-ID board



1	**Rear identify button** Pressing this button lights up the rear identify indicator. The front and rear identify indicators will be synchronized.
2	**Rear identify/Fault indicator (green LED)** Lights green: This system has been selected for identification (identify LED is lit) by pressing the front or rear identify button. To deselect the system, press either of the identify buttons again. Blinks green: SUM error:. A malfunction has occurred in the system.

Controls and indicators on the PSU

In its basic configuration the system comes with two hot-swappable power supply units (1 and 2 in figure below). The power supply units automatically adjust to any power voltage in the range (100 V - 127V or 200 V - 240 V).

System power supply configuration		
System with:	**No redundancy**	**Redundancy**
Up to five server blades	2 PSUs	3 PSUs
Six server blades or more	3 PSUs	4 PSUs

Two power supply units ensure the power supply for a system with up to five server blades. In this case no power supply redundancy is given. For a redundant power supply configuration a third power supply unit (3 in figure above) can be installed. If one of the three units fails, the other two ensure that operation continues unimpaired. The defective power supply unit can be replaced during operation (hot-swap).

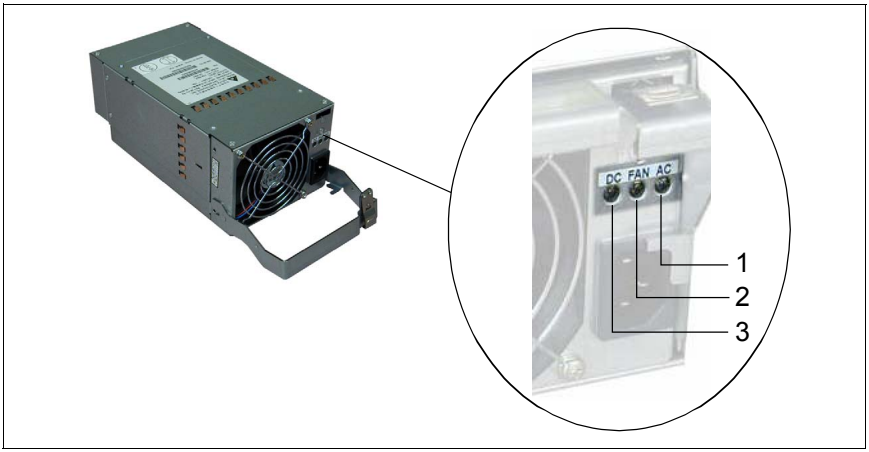
For a system with six server blades and more three power supply units are necessary. In this case no power supply redundancy is given. For a redundant power supply configuration a fourth power supply unit can be installed. If one of the four units fails, the other three ensure that operation continues unimpaired. The defective power supply unit can be replaced during operation (hot-swap).

The unoccupied PSU locations (slots) are fitted with dummy modules to ensure that the electromagnetic emission properties of the system are observed and that the system components are properly cooled.

Because of chassis airflow disruption, the power supply unit bay should not be vacant and/or not covered for more than five minutes when the system power is ON. Exceeding the five-minute limit may damage components.

The power supply unit can communicate with the system service processor via the I2C bus interface. PSU part number, FRU number, barcode number, manufacturer ID, and fault data are stored in a VPD EEPROM module with I2C interface. The PSU status can be displayed via the server management software *ServerView*.

There are three LED indicators on the front of the power supply unit for PSU status monitoring.



Power supply condition	**1** **AC indicator (green LED)**	**2** **Fan failure indicator (green LED)**	**3** **PSU status indicator (green LED)**
AC present/only standby outputs ON	ON	OFF	OFF
Power supply DC outputs ON and OK	ON	ON	ON
Fan failure alert	ON	blinks*	ON
Current limit	ON	ON	OFF
Alert # or fan # shutdown	ON	blinks*	OFF

* The blinking LED can be reset only via power ON/power OFF and/or by unplugging the power supply cable.

Each PSU contains three fans (see page 02-BX600-144 for further details). If fan 1 fails, the PSU is shut down in order to avoid airflow disruption and satisfy fire protection measures. If either fan 2 or fan 3 fail, the PSU continues working. However, replacing the defective PSU is strongly recommended!

Switching the server on and off

If only flickering stripes are displayed on the screen after the server has been switched on, switch off the server immediately. See page 02-BX600-67.

The system ON/OFF power button does not disconnect the system from the mains voltage. To completely disconnect it, you must remove the power plugs from the sockets.

Switching ON the system (system is powered OFF)

- Press the system power ON/OFF button for 2 seconds. Depending on the BIOS settings, the server blades can be switched on automatically one after another (see BIOS manual) according to the slot numbering (see page 02-BX600-5).
- If necessary, switch ON the required server blades.

First-time installation

A detailed description can be found on page 02-BX600-39ff.

System already installed

The system is switched ON and the activated server blades perform a system test and boot the operating system.

Switching OFF the system (system is powered ON)

The system is operating (server blades are also switched ON).

- For **graceful shutdown** of all server blades, press the system power ON/OFF button for 4 seconds. The server blades will then be powered OFF.
- For **hard shutdown of** all server blades, press the system power ON/OFF button for 10 seconds. The server blades will be powered OFF immediately.

Other ways to switch ON the system

– Using the web interface of the management blade

  Using the web interface of the management blade, you can switch on the blade server system as well as each of the server blades.

– After power failure

  The system automatically switches ON following a power failure, and the server blades which were operating before the power failure are booted automatically.

Switching the server blades ON/OFF

The system must be powered ON.

The server blade can be switched ON and OFF in the following ways:

– To switch ON the server blade, press the power button of the server blade.

  To switch OFF the server blade, press the power button of the server blade for 4 seconds.

– Specified **switch-ON time/switch-OFF time**

  The server blade is switched ON or OFF at a time specified in the *ServerView* program.

– After power failure

  The server blade automatically switches ON following a power failure (depending on the settings in the BIOS).

Server Blade Setup Using ServerStart

There are three ways to set up the server blades:

– Local installation with *ServerStart* (see page 02-BX600-39)

– Remote installation (see section *ServerStart Remote Installation* in the *ServerView Suite* user guide and on the PRIMERGY *ServerBooks* CD).

– Deployment of cloning images from a remote image repository to the desired *server blades* (for more information see the *RemoteDeploy* manual on the *ServerBooks* CD (as of version 5.210).

> –The *RemoteDeploy* software package can be obtained from Fujitsu Siemens Customer Service under the order number U15000-C180.

Reference installation

A reference installation of a *server blade* with the help of *ServerStart* serves as basis for a cloning image. This image is created and then used by *RemoteDeploy* for the duplication of other *server blades*.

> For detailed information on how to use *ServerStart*, see the S*erverView Suite* user guide and on the PRIMERGY *ServerBooks* CD.

Hardware preparation

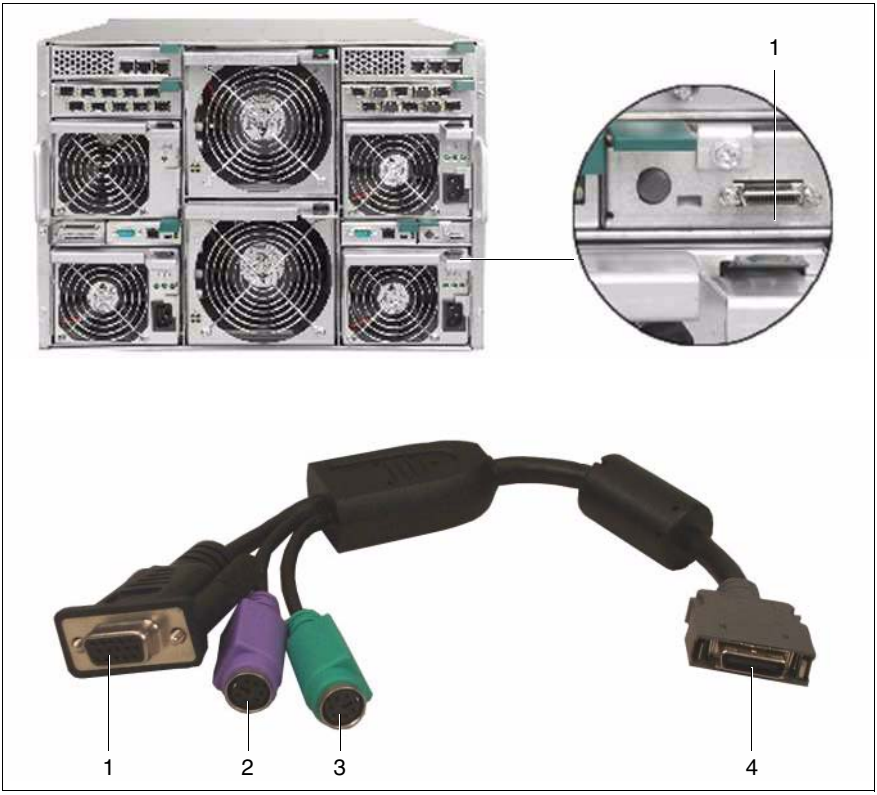
To allow first-time installation of a server blade using *ServerStart* or to allow later adjustments, the desired *server blade* must be connected to a CD-ROM and floppy disk drive via a USB interface. A monitor, keyboard and mouse must also be connected to the BX600 cabinet rear and routed to the desired *server blade* via the internal KVM switch.

Connecting the USB CD-ROM drive and floppy disk drive to the server blade

► Connect the breakout cable to the USB/VGA front panel connector of the desired *server blade*.

- Connect the data cables of the CD-ROM and floppy disk drives to the USB ports on the breakout cable.
- Switch on the server system and the desired *server blade*.
- If the CD-ROM and floppy disk drives are not powered by the USB hub provided by the breakout cable, connect their mains adaptors to grounded mains outlets.

Connecting the monitor, keyboard and mouse to the BX600 housing



- Connect the KVM cable to the KVM connector (1) on the rear of the server.
- Connect the mouse (2, green) and keyboard cables (3, purple) to the PS/2 connectors of the KVM cable.
- Connect the data cable of the monitor to the VGA connector (4) of the KVM cable and plug the monitor power cable into a grounded mains outlet.

► Press the KVM button (1) on the front panel of the server blade to route the keyboard, mouse and monitor to the KVM blade.

Software preparation

Adjusting the CD-ROM drive

To install an operating system, you must boot the desired server blade from the *ServerStart* CD-ROM. In some circumstances you will need to adjust several settings to do this:

► Insert the *ServerStart* CD in the CD-ROM drive and press the power button (2) on the front panel of the server blade.

► Press the KVM button (1) on the front panel of the server blade to route the keyboard, mouse and monitor to the KVM blade. Wait a few seconds until the monitor is activated.

- When prompted, press [F2] to enter the server blade's *BIOS Setup.*
- In the *Phoenix BIOS Setup Utility*, select the *Boot* submenu and activate the *Boot from CD-ROM Drive* option.
- Press [ESC] twice and choose *Exit Saving Changes* from the *Exit* submenu.

Once the *Server Blade* has booted from the *ServerStart* CD-ROM, the startup screen is displayed.

Settings

The Switch Blade

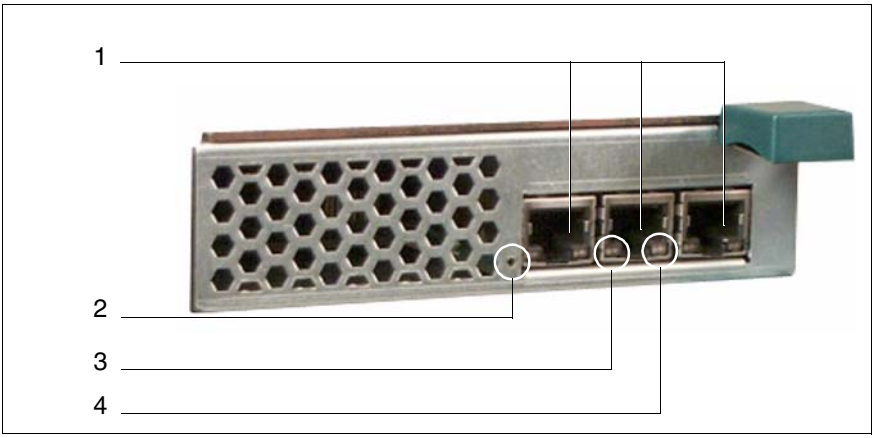
The hot-swappable redundant switch blade provides high-speed LAN access via multiple gigabit interfaces. The switch blade has ten downlink ports to the server blades and three uplink ports. These LAN connections provide the I/O functionality for the server blade. All traffic to and from the system occurs via the network.

The switch blade provides convenient user interfaces: A web interface is available as well as a command line interface using the Telnet protocol. For a detailed description please see the manual “LAN Switch Blade User Interface Description”.

If LAN connection is required, the system can be equipped with one or two switch blades. The slots for these blades are located on the rear of the server system. The 10 server blades are accessed from the switch blade(s).

The control and connection panel

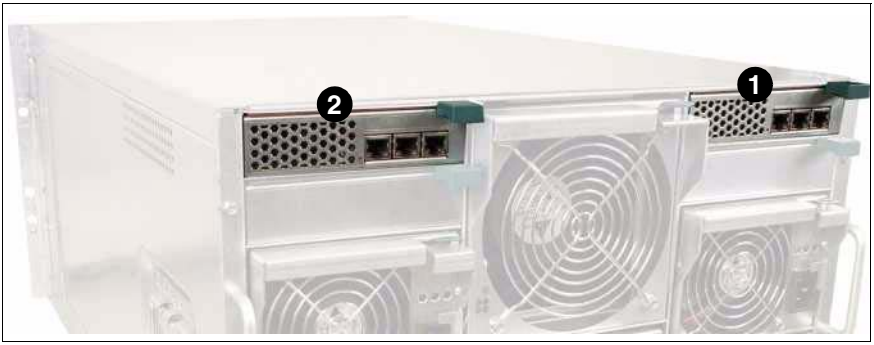
The connection panel of the *switch blade* can be accessed on the server rear.



The following indicator and connection elements are available:

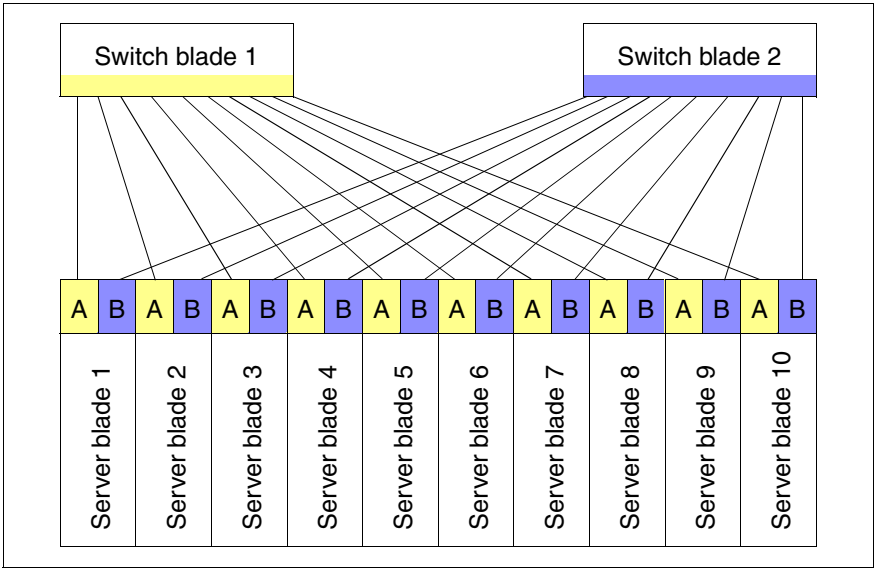
1	3x **uplink LAN connectors** (with two integrated LAN status LEDs each (see next positions 3 and 4))	
2	**Failure indicator (amber LED)**	
	Unlit:	The switch blade is OK. System is switched OFF.
	Lights amber:	The switch blade has failed.
	Blinks amber:	The switch is selected for identification via CLI.
3	**LAN active indicator (amber LED)**	
	Lights amber:	The LAN is active.
	Blinks amber:	This LAN port is directly controlled by via the management blade user interface.
4	**LAN link indicator (green LED)**	
	Lights green:	The LAN is linked.
	Blinks green:	This LAN port is directly controlled by via the management blade user interface.

Switch Blade Port Assignment



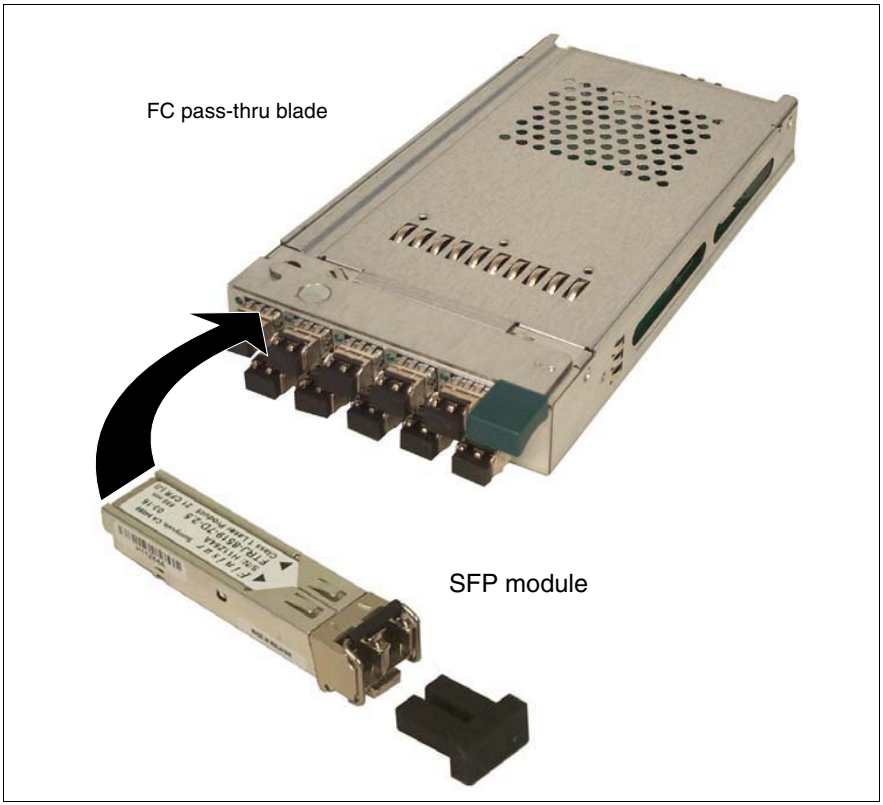
The first switch blade (1) is connected via the internal midplane to each ports A of all the server blades, e. G. LAN port A of server blade 1 is connected to port 1 of switch blade 1. If port B of the server blades is also to be used, a second switch blade must be installed in the corresponding slot (2). In this case the two switch blades are redundant.

The figure below shows the assignment of the server blade LAN ports to the switch blade ports.


Switch blade 1
Switch blade 2
A B A B A B A B A B A B A B A B A B A B
Server blade 1
Server blade 2
Server blade 3
Server blade 4
Server blade 5
Server blade 6
Server blade 7
Server blade 8
Server blade 9
Server blade 10

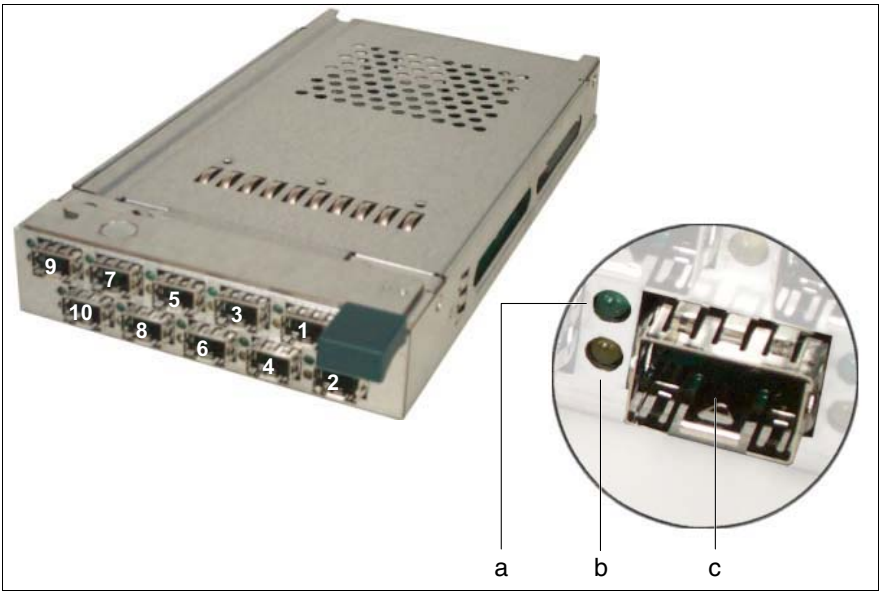
The Fibre Channel pass-thru Blade

A Fibre Channel (FC) pass-thru blade provides 10 ports for the bypass connection between FC daughter boards (see page 02-BX600-98) and optical transceivers for serial FC I/O and general-purpose I/O signals. An FC pass-thru blade also provides LEDs for each FC port to indicate the link status.



If one or more server blades are equipped with FC daughter boards for connection via Fibre Channel, at least one FC pass-thru blade must be installed.

Control and connection panel



The following indicator and connection elements are provided:

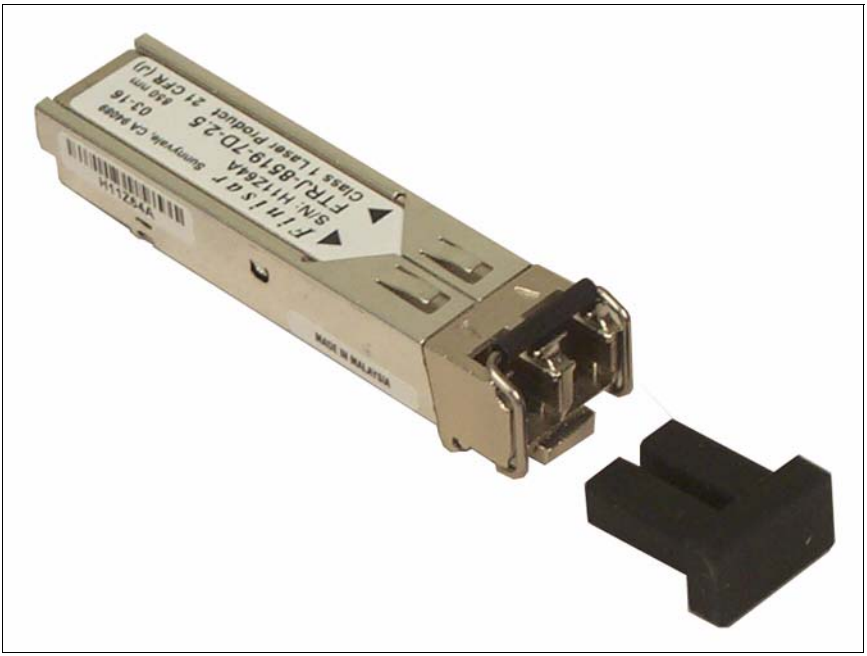
a	**Fibre Channel active indicator (green LED)**
b	**Fibre Channel link indicator (amber LED)**
c	**Fibre Channel SFP connector** Slot for Fibre Channel SFP module (see section „Fibre Channel SFP module“ on page 48). The slot numbers are assigned to the server blade slots on the front of the BX600 system.

The following table shows the conditions of the Fibre Channel ports indicated by the LEDs.

Fibre Channel condition	**a**	**b**
Power ON	ON	ON
Fibre Channel is online	ON	OFF
Signal acquired	OFF	ON
Loss of synchronization	ON	blinks

Fibre Channel SFP module

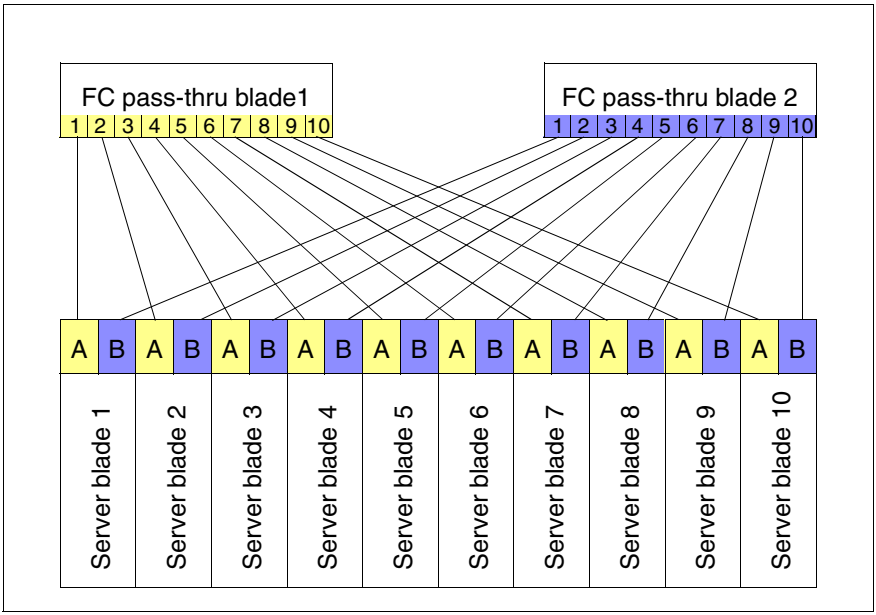
A Fibre Channel SFP module is required to connect an FC pass-thru blade port to a Fibre Channel cable. If no cable is plugged in, the SFP module slots must be fitted with a safety plug as shown in the figure below.



Fibre Channel pass-thru Blade Port Assignment

There are two slots for FC pass-thru blades on the rear of the BX600 system. The FC pass-thru blade in slot 1 provides a connection to channel A of the installed FC daughter boards, while the FC pass-thru blade in slot 2 provides a connection to channel B of the installed FC daughter boards.

The figure below shows the assignment of the server blade Fibre Channel ports to the FC pass-thru blade ports.


FC pass-thru blade1
1 2 3 4 5 6 7 8 9 10
FC pass-thru blade 2
1 2 3 4 5 6 7 8 9 10
A B A B A B A B A B A B A B A B A B A B
Server blade 1
Server blade 2
Server blade 3
Server blade 4
Server blade 5
Server blade 6
Server blade 7
Server blade 8
Server blade 9
Server blade 10

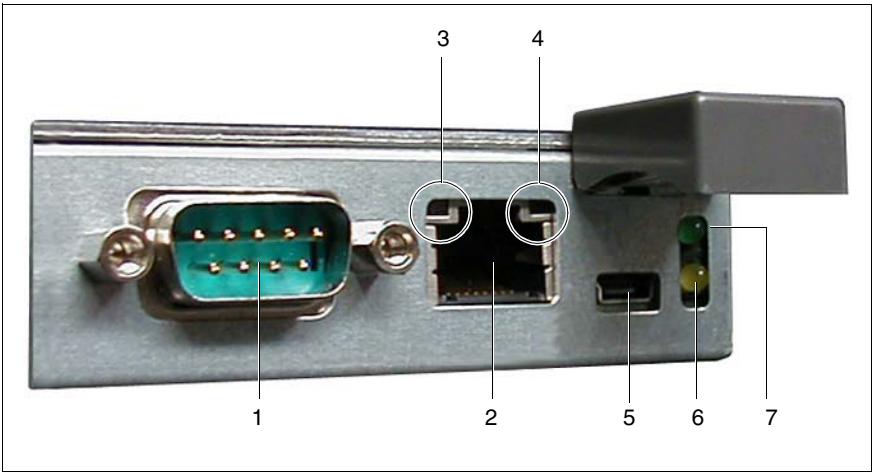
The Management Blade

The BX600 blade server system accommodates two hot-swappable, redundant *management blades* that offer an integrated management solution for complete remote administration of the system. These two *management blades* have separate10 Mb LAN connections to maintain accessibility to the system even if the standard traffic network connections are down.

The management blades provide convenient user interfaces: A web interface is available as well as a console menu interface using the Telnet protocol. For a detailed description please see the manual “RemoteView Management Blade - User Interface Description”.

The *management blades* (1 and 2) are accessible from the server rear.

Management blade control and connection panel



The following indicator and connection elements are available:

1	**Serial port connector** Standard serial port, management communication port.
2	**LAN connector** (with two integrated LAN status LEDs (see next positions 3 and 4)) LAN port, RJ45, 10Mb management LAN.
3	**LAN link indicator (green LED)** Lights green: The LAN is linked. Blinks green: Boot up power ready indicator.
4	**LAN active indicator (amber LED**) Lights amber: The LAN is active. Blinks amber: Boot up power ready indicator.
5	**I2C connector** Proprietary I2C (IPMI) connector for Fujitsu Siemens Computers service applications.

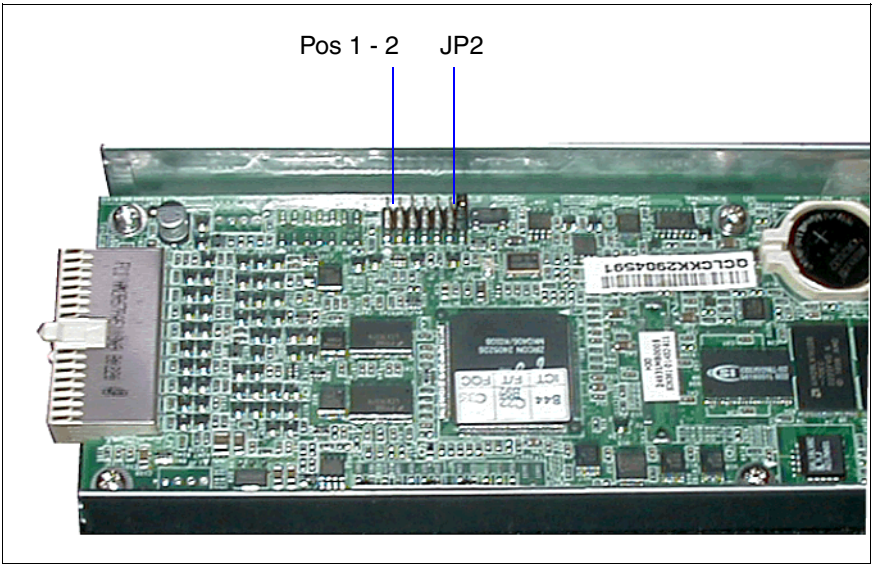
6	**Failure indicator (amber LED)**	
	Dark:	This management blade is OK (see table below).
	Lights amber:	If only one management blade is present: this blade has failed (see table below).
	Blinks amber (2 sec.):	Management blade is running in power up mode (generating heart beat for master/slave selection).
7	**Master indicator (green LED)**	
	Unlit:	This management blade is a slave (standby), backup of the master management blade (see table below).
	Lights green:	This management blade is the master, responsible for the entire system management (see table below).
	Blinks green:	This management blade is in special mode

The following table shows the conditions of the management blades indicated by the interaction of master indicator and failure indicator LEDs.

Management blade condition	**Master indicator (green LED)**	**Failure indicator (amber LED)**
One management blade is installed and alive	ON	OFF
Two management blades are installed	ON (Master) OFF (Slave)	OFF
One management blade is installed and hang up	ON	ON
Two management blades are installed and both hang up	ON	ON

If the default settings of the management blade are destroyed, they can be restored.

Jumper Settings



Management-Blade JP2

Jumper JP2 Settings	**Mode**
1 - 2	Load default settings
3 - 4	Clear password
5 - 6	Recovery mode
7 - 8	Diagnostic mode
13 - 14	Normal mode (default)
5 - 6, 7 - 8	Manufacture mode

Temperature/System monitoring

The temperature and system monitoring aims to reliably protect the computer hardware against damage caused by overheating. In addition, any unnecessary noise is also prevented by reducing the fan speed, and information is provided on the system status. The temperature and system monitoring are controlled by an onboard controller developed by Fujitsu Siemens Computers.

The following functions are supported:

Temperature monitoring

Measurement of the processor temperature, measurement of the system temperature with an onboard temperature sensor, measurement of the ambient temperature with an optional temperature sensor.

Fan monitoring

Fans that are no longer available and blocked or sticky fans are detected. Blocked or sticky fans are operated with 12 V pulse voltage. Fans removed while the system is switched off are indicated by an LED when the system is switched on again and processed by the BIOS or the application.

Fan control

The fans are regulated according to temperature.

Sensor monitoring

The removal of, or a fault in, a temperature sensor is detected. If this happens, all fans monitored by this sensor run at maximum speed to provide the highest possible protection of the hardware. Temperature sensors removed while the system is switched off are indicated by an LED and can be located by means of *ServerView* (see manual „ServerView - Server Management).

Possible screen resolutions

Depending on the operating system used, the screen resolutions in the following table refer to the screen controller on the system board. If you are using an external screen controller, you will find details of supported screen resolutions in the Operating Manual or Technical Manual supplied with the controller.

Screen resolutions	Refresh rates (Hz)	Maximum number of colors
640x480	200	16.7 million
800x600	200	16.7 million
1024x768	200	16.7 million
1057x864	120	16.7 million
1280x1024	100	16.7 million
1600x1200	75	16.7 million

Management Blade Initial Configuration

The management blade provides functions for managing the blade server system remotely via the LAN. For initial operation of the blade server system the LAN parameters of the management blade must be configured.

A local client system is required to perform the initial configuration of the management blade.

To configure the management blade, follow the steps listed below.

Pre-configuration requirements

The procedures that follow assume that the blade server is connected to the power line.

Cabling the system

- Connect the serial port of the client (COM1) to the serial port of the master management blade.

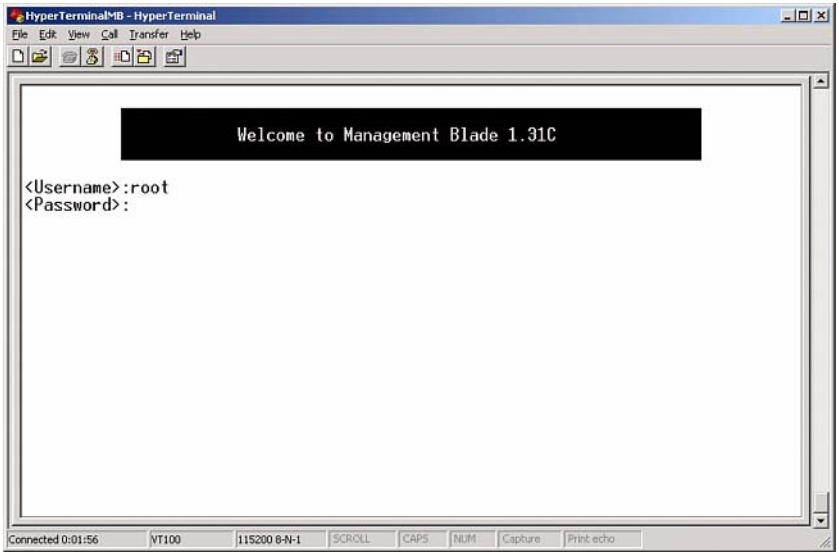
  The master management blade is indicated by a green LED (see page 02-BX600-51).

Initial configuration via serial connection to client

- Open a HyperTerminal session from the client to the master management blade. Use the following settings:

Bits per second	115200
Data bits	8
Parity	1
Stop bit	1
Flow control	None
Terminal type	VT100

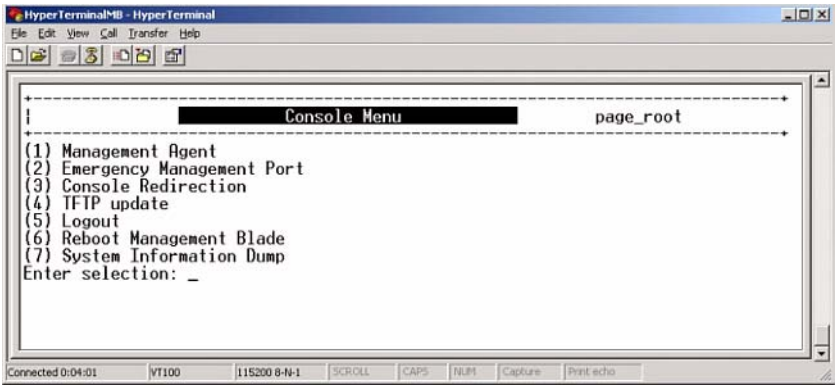
Once you have opened the HyperTerminal session the welcome screen of the console menu will be displayed (see figure below).



- Log in as `root`. The initial password reads `root`.

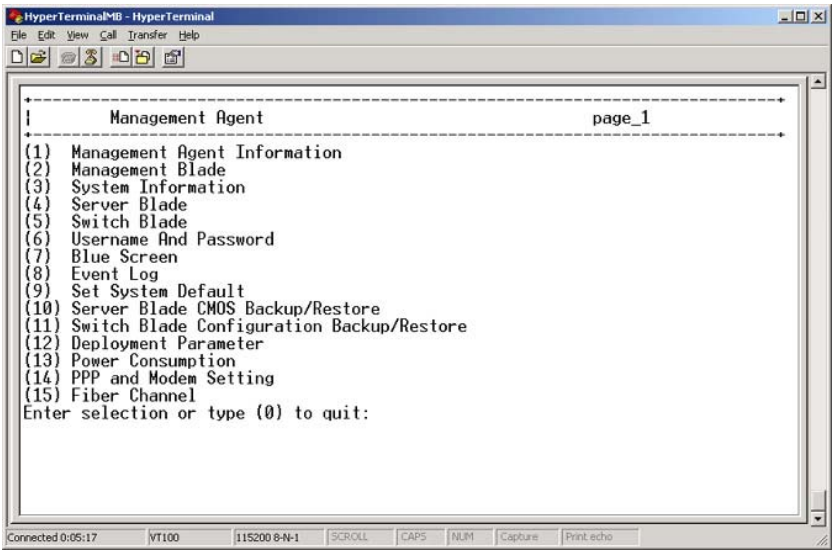
  Change the root password as soon as possible (see page 02-BX600-57). Failure to do so may result in unauthorized access and loss of customer data.

When you have logged on, the main menu of the console menu will be displayed.



► Enter 1 to call up the *Management Agent* menu.

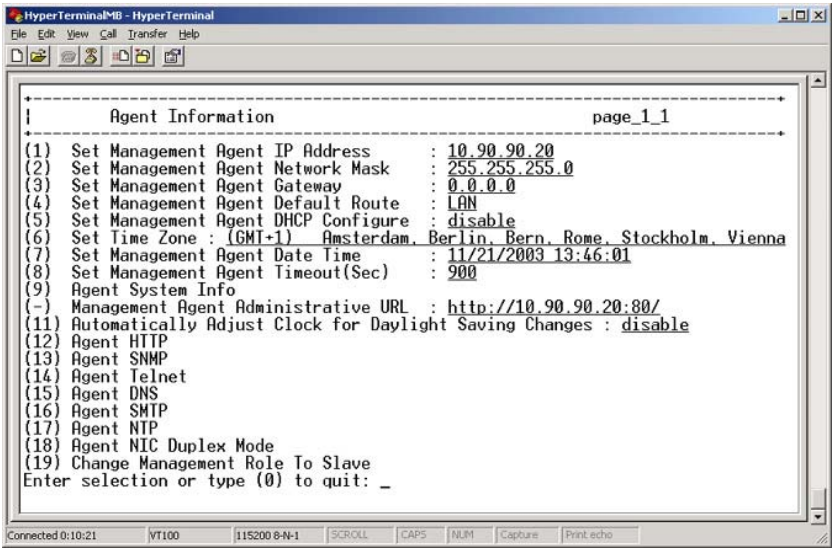
The *Management Agent* menu looks like this:



► Enter 1 to call up the *Management Agent Information* menu.

> **i** By Selecting 6 (*Username and Password*) in the Management Agent menu you can change the root password of the management blade. This should be done as soon as possible to avoid unauthorized access and loss of customer data.

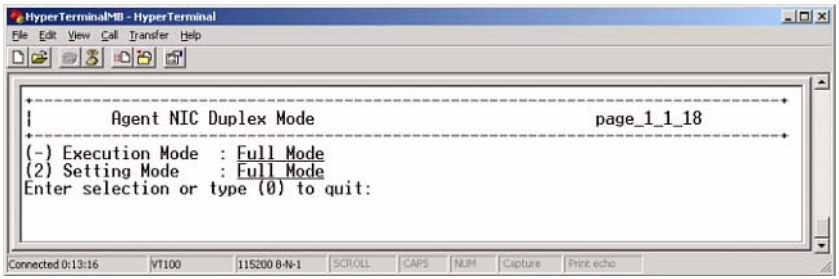
The *Management Agent Information* menu provides access to the parameters required by the LAN connection.


HyperTerminalMB - HyperTerminal
File Edit View Call Transfer Help
Agent Information page_1_1
(1) Set Management Agent IP Address : 10.90.90.20
(2) Set Management Agent Network Mask : 255.255.255.0
(3) Set Management Agent Gateway : 0.0.0.0
(4) Set Management Agent Default Route : LAN
(5) Set Management Agent DHCP Configure : disable
(6) Set Time Zone : (GMT+1) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
(7) Set Management Agent Date Time : 11/21/2003 13:46:01
(8) Set Management Agent Timeout(Sec) : 900
(9) Agent System Info
(-) Management Agent Administrative URL : http://10.90.90.20:80/
(11) Automatically Adjust Clock for Daylight Saving Changes : disable
(12) Agent HTTP
(13) Agent SNMP
(14) Agent Telnet
(15) Agent DNS
(16) Agent SMTP
(17) Agent NTP
(18) Agent NIC Duplex Mode
(19) Change Management Role To Slave
Enter selection or type (0) to quit: _
Connected 0:10:21 VT100 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

Follow the steps below to make the management blade accessible via the LAN.

- Select 1 to set the IP address of the management blade.
- Select 2 to enter the network mask of your subnet.
- Select 3 to enter the IP address of your gateway.
- Select 18 to call up the *Agent NTC Duplex Mode* menu.

i The management blade LAN controller only runs at 10 Mbit/sec. Duplex mode must be defined manually via the *Agent NTC Duplex Mode* (see figure below).


HyperTerminalMB - HyperTerminal
File Edit View Call Transfer Help
Agent NIC Duplex Mode page_1_1_18
(-) Execution Mode : Full Mode
(2) Setting Mode : Full Mode
Enter selection or type (0) to quit:
Connected 0:13:16 VT100 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

- Enter 2 if the preset duplex mode value needs to be altered or 0.

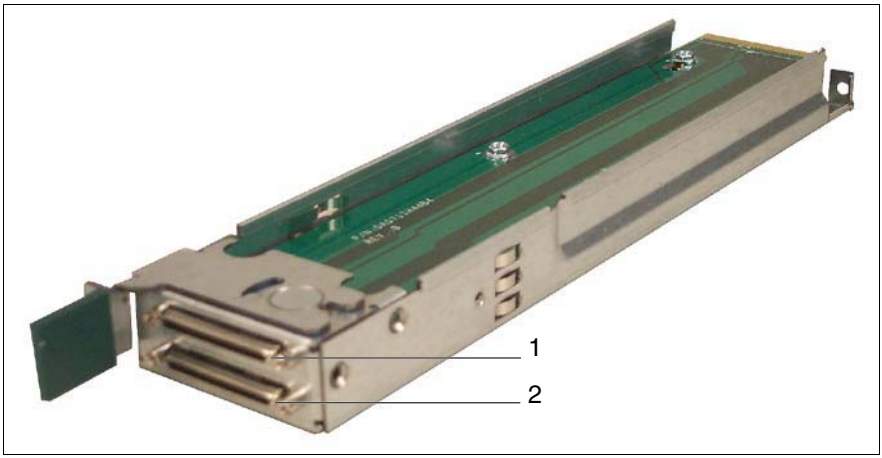
  The transfer rate of 10 Mbit/sec and the duplex mode of the management blade must comply with the client LAN controller! Automatic synchronization is not supported by the management blade LAN controller.

- Enter 0 in this menu and in the preceding menus to leave the management blade console menu.
- Close the HyperTerminal session.
- Unplug the power cable from the blade server and plug it in again to reboot the management blade.

The management blade can now be accessed remotely via LAN.

The SCSI Blade

The BX600 blade server provides a rear SCSI blade for SCSI bypass between the external SCSI connectors and the server blades in slots 4 and 10.



The interface of the upper SCSI connector (1) is supplied from the server blade in slot 4 and interface of the lower one (2) is supplied from the server blade in slot 10 (see page 02-BX600-5 for server blade slot numbering). The other server blades do not provide SCSI interface routing to the rear SCSI board.

RAID level 10 can be configured for the server blades 4 and 10 combining on board HDD's with HDD's connected via the SCSI blade.

The subsystems SX10 and SX30 can be connected via the external SCSI connectors provided by the SCSI blade. RAID support is not available via this interface.

Spare Parts and Add-On Modules

The following spare parts and add-on modules are available for the BX600 blade server system:

BX600 2-way server blade	A3C40052236
BX600 CPU blade button board kit	A3C40054045
BX600 dual blade CPU heat sink	A3C40052252
BX600 FC I/O-card	A3C40052238
BX600 management blade	A3C40053638
BX600 switch blade	A3C40052237
BX600 FC pass-thru blade	A3C40052239
BX600 KVM blade	A3C40053639
BX600 SCSI blade	A3C40053640
BX600 PCI expansion module	A3C40052240
BX600 midplane kit	A3C40054046
BX600 fan cage	A3C40053641
BX600 fan	A3C40054047
BX600 front control kit	A3C40055181
Power supply unit 1200W at 220 V, 850 W at 110 V	S26113-W479-V50
KVM cable	A3C40053645
USB/VAG breakout cable	T26139-Y3850-V300
BX600 dummy PSU	A3C40056488
Dummy CPU heat sink	A3C40052246

Diagnostics

Drive indicators

Optional USB CD-ROM/floppy drive

The indicator at the USB CD-ROM drive *lights up* when it is accessed.

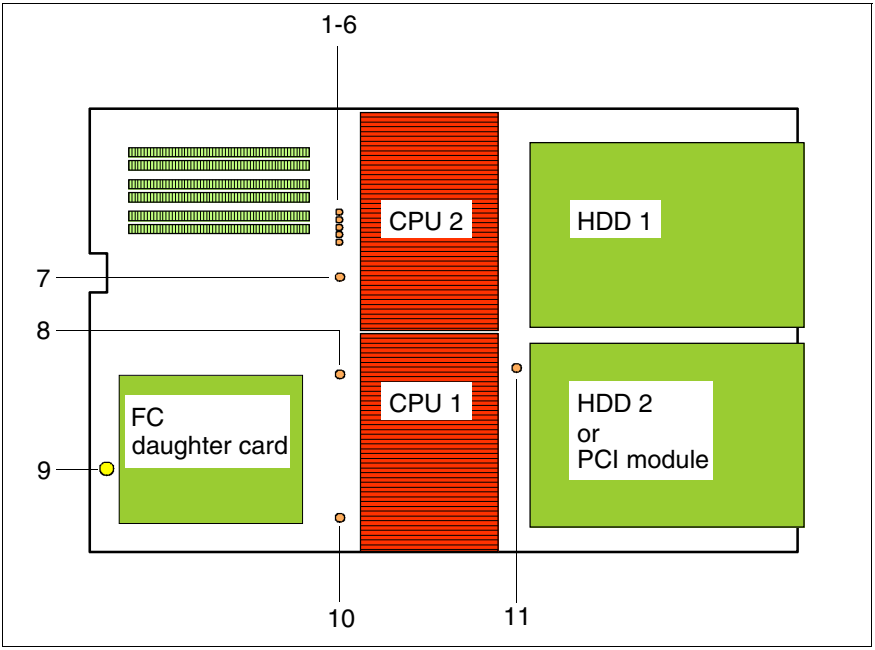
Hard disk drive

	Hard disk drive Lights up: when the hard disk drive is accessed (not in the case of an error)

Bear in mind that you cannot identify hard disk errors from the hard disk LEDs. If one of the hard disk drives fails, the LED will still indicate access to the intact hard disk drive.

Server Blade Diagnostics LEDs

Diagnostics LEDs help you to quickly localize defective components on the server blade.



► Press the diagnostics button (9) to localize the defective component through illumination of the associated diagnostics LED.

LED/button	Meaning
1-6	DDR-SDRAM module1-6 defective
7	CPU 1 defective
8	CPU 2 defective
9	Diagnostics button
10	FC Channel I/O module defective
11	PCI expansion module defective

Troubleshooting

System power LED remains dark after switching ON the system.

Power cables are not plugged in correctly

- ► Make sure that the power cables are correctly connected to the power supply units and to the mains socket strip of the rack (see page 02-BX600-28).

Power supply overloaded

- ► Unplug the power cables from the insulated sockets of the PSUs.
- ► Wait a few seconds and plug the power plugs back into the socket strip of the rack.
- ► Switch ON the server.

Front identify / fault LED blinks amber

A fault has occurred somewhere in the system.

One of the power supply units has failed

The PSU status LED blinks green if there is an error in the corresponding power supply unit e.g.:
- – General failure
- – Overtemperature
- – Overcurrent
- – Over- or undervoltage
- – The PSU is reaching its end of life or is operating in an environment that exceeds the specified limits.

The PSU fan failure LED blinks green if any of the fans are not working properly in the corresponding unit.

- ► Check the PSU status and/or fan failure LEDs to identify the defective unit (see page 02-BX600-34) and exchange it .

One of the fans has Failed

Even though the system can continue operating without one of the fans included in the rear fan module, you should:

- Exchange the defective fan module within a reasonable amount of time (see page 02-BX600-141).

Switch blade voltage fails

The failure LED of the switch blade lights up if there is a general error there.

- Check the switch blade's failure LEDs to identify the defective unit.
- If the *switch blade* is still indicated as defective, replace it (see page 02-BX600-106).

Server switches itself off

Server management has detected an error

- Check the error list in the *ServerView* software or the error log file with the *SCU utility* and try to eliminate the error found (see manual „RemoteView Management Blade“).

Screen remains dark

Monitor is switched off

- Switch on the monitor
- Switch off the monitor.

Monitor power cable or data cable not connected

- Shut down the operating system and switch off the monitor and the server.
- Check that the power cable is correctly connected to the monitor and the grounded power outlet.
- Check that the monitor cable is correctly connected to the server and the monitor (in case a plug is available). If a separate graphics card is installed in the server, the monitor cable must be connected to the connector on this graphics card.
- Switch on the monitor and the server.

Screen is blanked out. A screen saver may be running.

- ► Press any key on the keyboard or move the mouse. Enter a password if necessary.

Brightness control is set to dark

- ► Adjust the monitor's brightness settings. For detailed information, please see the operating manual supplied with the monitor.

Flickering stripes on the screen

Switch off the server blade immediately.

Monitor does not support the horizontal frequency set.

- ► Find out which horizontal frequencies are supported by your monitor. For more information on the horizontal frequency (also called line frequency or horizontal deflection frequency), see the operating manual for the monitor.
- ► For how to set the correct horizontal frequency for your monitor, see the documentation for your operating system or the software for your screen controller and follow the appropriate procedure.

No screen display or drifting screen display

The wrong horizontal frequency or resolution is set for the monitor or the application.

- ► Find out which horizontal frequencies are supported by your monitor. For more information on the horizontal frequency (also called line frequency or horizontal deflection frequency), see the operating manual for the monitor.
- ► For how to set the correct horizontal frequency for your monitor, see the documentation for your operating system or the software for your screen controller and follow the appropriate procedure.

No mouse pointer displayed on the screen

Mouse driver not installed

- ► Check that the mouse driver is installed correctly and activated. For information on the mouse driver, see the documentation for mouse, operating system and application program.

Floppy disk cannot be read or written

- ► Check that the write protection of the floppy disk is activated.
- ► Check the entry for the floppy disk drive in the *BIOS Setup* (see BIOS manual).
- ► Check in the *BIOS Setup* that the floppy disk drive controller and the write permission are switched on (see BIOS manual).
- ► Make sure that the cables of the floppy disk drive are connected correctly.

Time and date are not correct

- ► Set the time and/or date in the operating system or in the *BIOS Setup*.

  i If the time and date are repeatedly wrong after the server has been switched off and on again, the lithium battery must be replaced (see page 02-BX600-88).

System will not boot after installing a new hard disk drive

- SCSI configuration incorrect (onboard SCSI HostRAID controller Adaptec 7902W)
  - ► Check in the SCSI configuration menu the settings for the hard disk drives (*SCSI Device Configuration*) and the additional settings (*Advanced Configuration Options*).

Drives are reported as „dead“ at system boot

This error message can occur, when the server has a RAID controller.

- Configuration of the RAID controllers is wrong.
  - ► Check and correct with the utility for the RAID controller the settings for the drives.

Further information can be found in the operating manual concerning the RAID controller.

Added drive is reported as defective

This error message can occur, when the server has a RAID controller.

- RAID controller not configured for the drive
  The drive was probably installed when the system was switched off.
  - ► Configure the RAID controller for the drive using the appropriate utility. Further information can be found in the documentation of the RAID controller; for HostRAID functionality of the onboard SCSI controllers see the manual „Adaptec HostRAID User's Guide“ (on the ServerBooks CD under the selection „Controller“.

  or

  - ► Reinstall the drive while the system is switched on.

If the hard disk drive continues to be shown as faulty, please replace it.

Removal and Installation Routines

Preparation

When working with systems and boards, make sure you observe the safety information in the module „General information“.

If you do not want to carry out hot-swap operations, please shut down the operating system, switch off the server, and unplug all power plugs.

The Server Blade

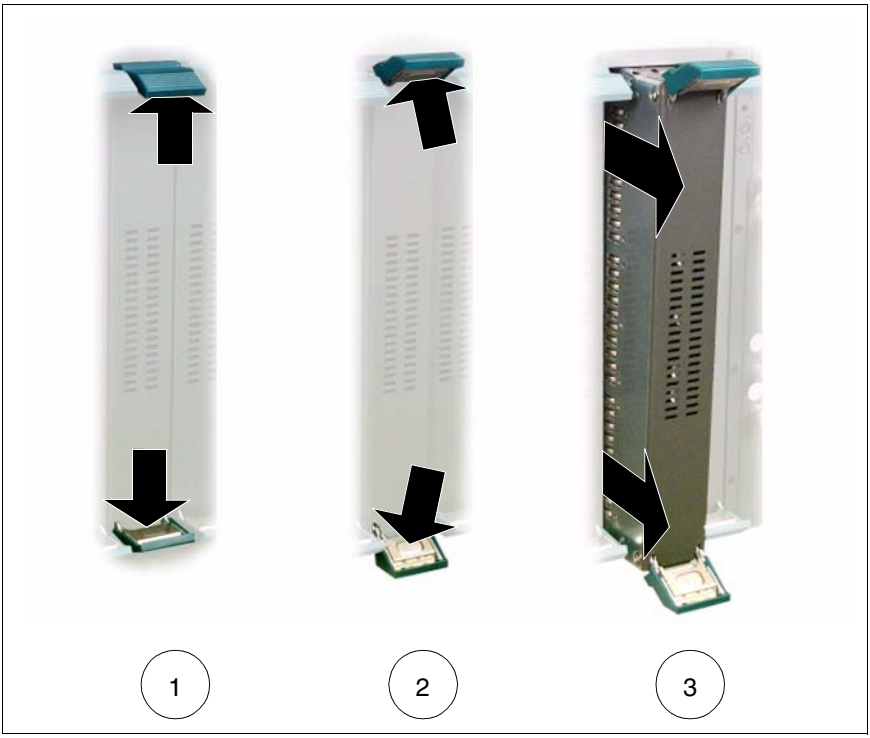
Removing or Installing Server Blade Dummy Modules

All unoccupied slots in the blade server system are fitted with dummy modules to ensure that the electromagnetic emission properties of the system are observed and that the system components are properly cooled.

Before adding a *server blade* to a new mounting location, you must remove the dummy module from the relevant slot.

Removal

Requirements



- Release the locking mechanism of the ejecting handles by pressing the touch points on the inside of both handles (1) simultaneously. The ejecting handles of the dummy module will be disengaged.
- Swing up the upper handle and swing down the lower handle simultaneously (2) until the locking mechanism of the dummy module disengages and the dummy module ejects.
- Remove the dummy module completely from the slot (3).

Keep the dummy module for future use. If the server blade is removed and not replaced with a new server blade, then the dummy module must be reinstalled for cooling and to comply with the applicable EMC regulations (regulations on electromagnetic compatibility).

Installation

Installation is performed in reverse order, according to the mounting instructions applicable for *server blades* (see page 02-BX600-73).

Installing or Removing Server Blades

Installation

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

- Press the touch points on the inside of the eject handles (1) of the server blade to disengage the locking mechanism of the handles.
- Turn the eject handles outward (2) into the unlocked position.

► Push the server blade into the slot as far as possible while keeping the eject handles in the unlocked position.

i Please make sure that the server blade is mounted in the correct direction. The upper narrow side of the server blade is marked by the graven label **TOP-SIDE** (1).

► Press the eject handles to enable the locking mechanism to engage fully.

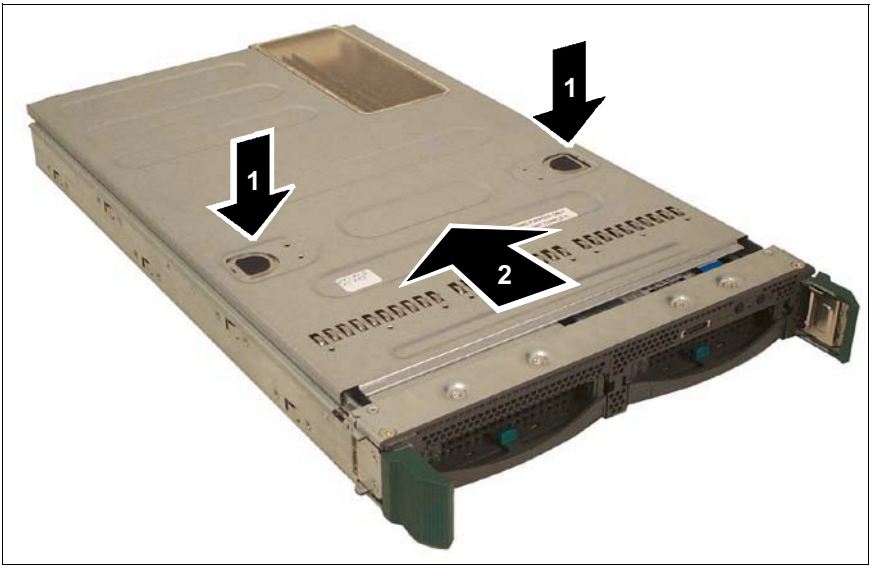
Removal

Server blades are removed according to the instructions applicable for dummy modules (see page 02-BX600-71).

When you remove the server blade and do not replace it with a new one, you must insert a dummy module in the empty slot. Make sure that the dummy module engages properly in the slot.

Opening a Server Blade

Server blades can be extremely sensitive to electrostatic discharge and must always be handled carefully. Before you remove the cover plate from the server blade, place it on a non-conductive, antistatic surface. Do not slide the server blade over any surface.



- Press down the two top cover release latches (1) simultaneously to disengage the locking mechanism of the cover plate, slide the cover plate (2) backward and lift it off.

Hard Disk Subsystem on the Server Blade

Each server blade can accommodate two 3.5-inch hot-swappable SCA2 SCSI hard disk drive (HDD) modules.

The hard disk drives are controlled by the on-board Adaptec HostRAID U320 7902 controller. Usually two disks are mirrored in a RAID 1 configuration (see „Notes on RAID levels“).

RAID level 10 can be configured for the server blades 4 and 10 combining onboard HDDs with HDDs connected via the SCSI blade. (see page 02-BX600-60).

Notes on RAID levels

– *RAID level 0*
Rebuild is not possible. If a hard disk drive fails, its data is lost.

– *RAID level 1 without standby hard disk (mirroring)*
Rebuild on the new hard disk drive is carried out automatically when the old disk drive is replaced.

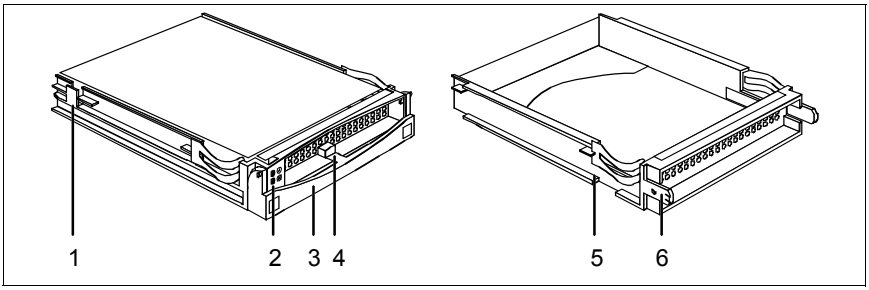
If a hard disk drive belongs to a disk array operated in RAID level 1, it must be replaced with a hard disk drive with the same capacity or higher. A rebuild of the data on the new hard disk drive is performed automatically after the replacement, provided that the onboard HostRAID controller is configured correctly.

Installing/replacing hard disk drives

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

Hard disk drive module and dummy module

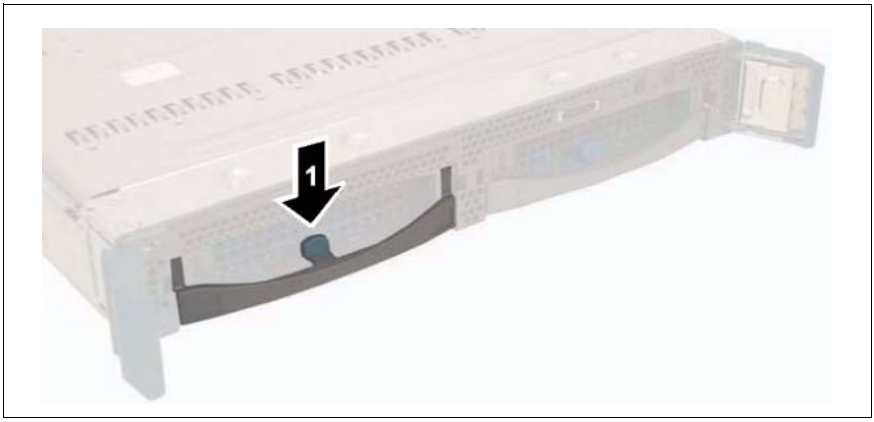


1	Hard disk drive module (hard disk drive carrier with installed hard disk drive)
2	Indicators (green and orange LED)
3	Handle for locking and unlocking the hard disk drive module
4	Locking button
5	Dummy module
6	Locking tabs for the dummy module

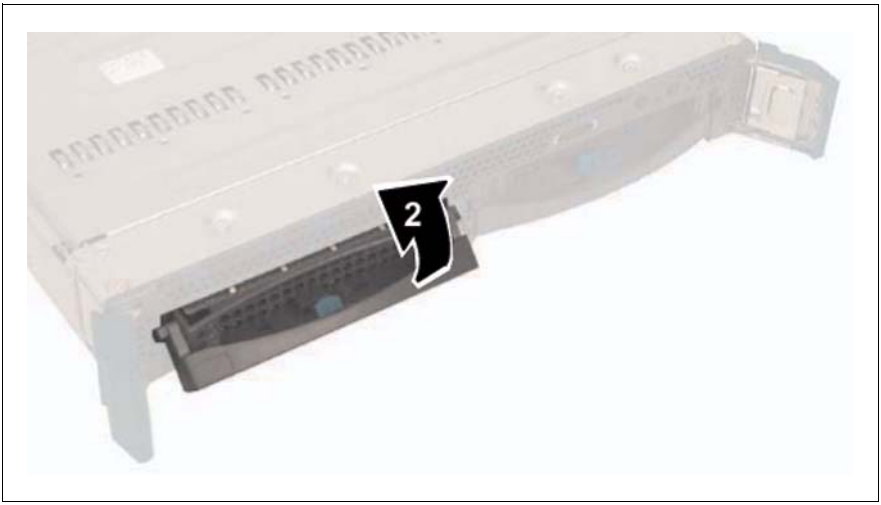
Requirements

Make sure that it is operated on a RAID controller and is part of a disk array that operates at RAID level 1 or 10.

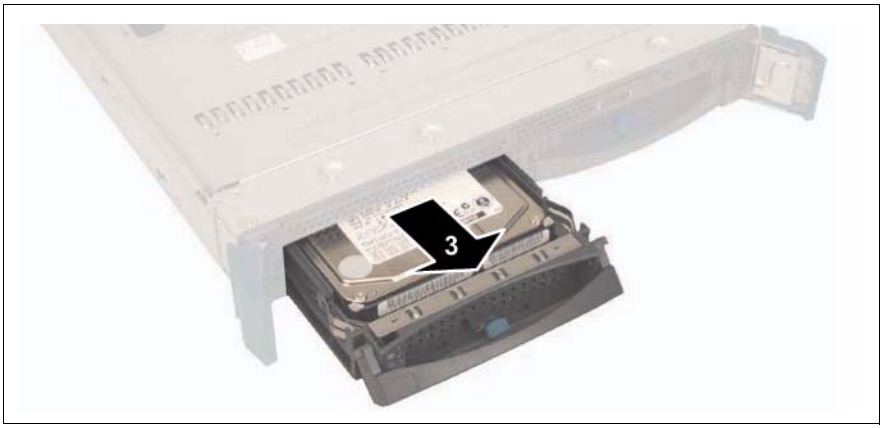
Removing a hard disk drive module



► Press the locking button (1) until the locking mechanism of the module handle disengages.



► Swing up the module handle (2).



► Remove the hard disk module from the bay (3).

No jumper settings on the hard disk drives need to be adjusted.

If a hard disk drive module has been removed and no new module is installed in its place, you should install a dummy module in the empty bay. Make sure that the dummy module engages properly in the bay.

Installation

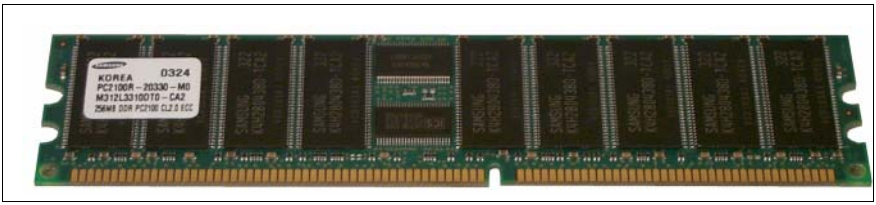
Installation of a hard disk drive module is performed in reverse order.

Exchangeable Drives

In needed, CD-ROM and floppy drives can be connected via USB. A USB port is provided on the *server blade* front panel via a breakout cable (included in the server system delivery pack). For more information on the *server blade* expansion panel and breakout cable, see page 02-BX600-25.

Main Memory

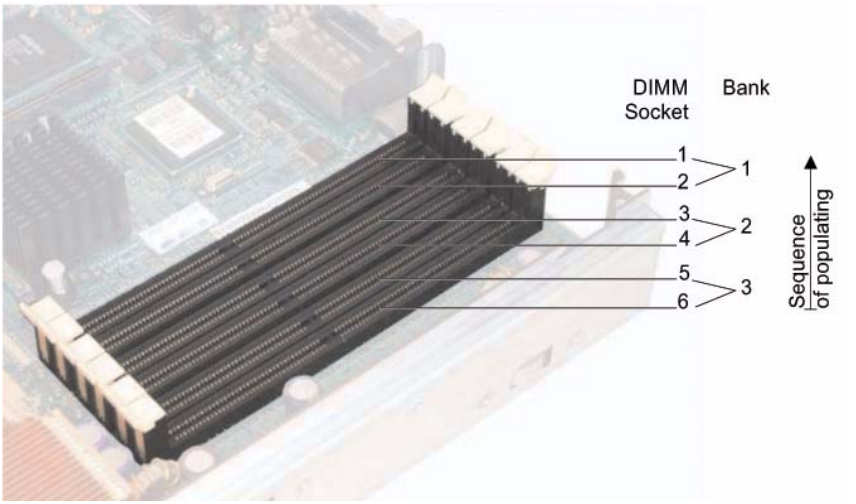
On the server blade there are three memory banks. A memory bank consists of two 184-pin DIMM sockets. A memory bank can be populated with 512 MB, 1 GB, 2 GB or 4GB DDR-SDRAM consisting of two modules. The maximum memory expansion is 12 GB.



Installing memory modules

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

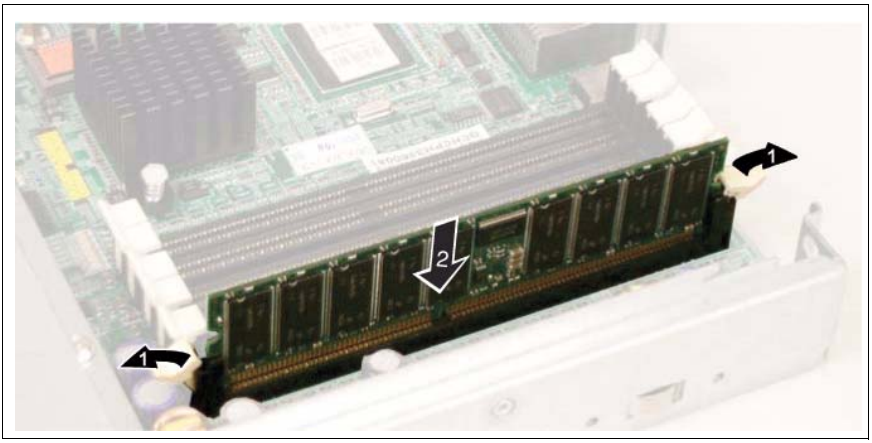


I Observe the correct sequence when plugging in the DDR-SDRAM modules. The banks with the highest numbers must be equipped first. If there are DDR-SDRAM modules with different capacities, put the higher-capacity modules as near as possible to the chip set.

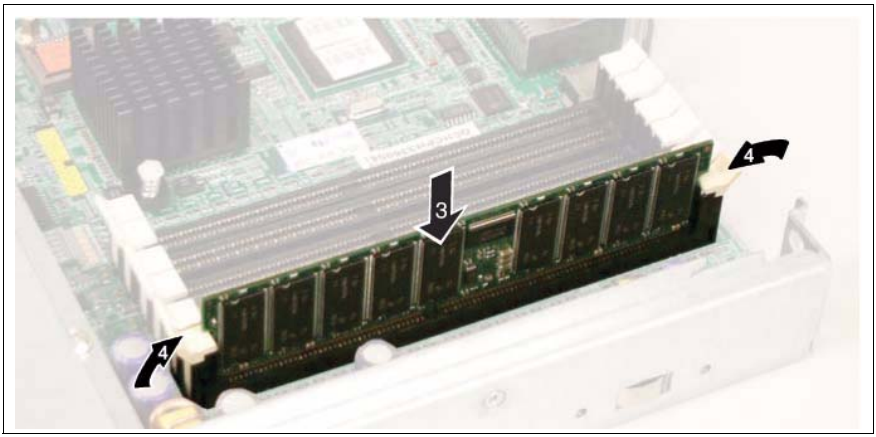
Example: If you have a 512 MB memory and a 1GB memory, each consisting of two DDR-SDRAM modules, put the 1 GB modules in bank 2 (sockets 3 and 4) and the 512 MB modules in bank 3 (sockets 5 and 6).

Requirements

– The relevant *server blade* has been removed (see page 02-BX600-73)



- Press the two levers in the direction of the arrows (1) to disengage the locking mechanism of the SDRAM socket.
- Position the SDRAM module so that the two notches on the bottom edge align with the socket on the server blade (2).



- Insert the SDRAM module into the socket and press firmly in the direction of the arrow (3) until it is seated correctly.
- Secure the SDRAM module by carefully pushing the two levers (a) into the locking position (4).

i The SDRAM modules are equipped with coded connectors so that they cannot be wrongly installed.

Removing memory modules

Removal of memory modules is performed in reverse order:

- ► Flip the ejector tabs on each side of the slot outwards. The memory module will be levered out of its DIMM slot.
- ► Remove the memory module from its slot.

Processors

A PRIMERGY BX600 *server blade* contains either one or two Intel® Xeon™ processors with 2.8 GHz to 3.2 GHz.

The 2,80 GHz CPU provides 512 KB Second-Level-Cache. Both the 3,06 GHz and the 3,2 GHz CPU provide in addition 1 MB Third-Level-Cache.

A server blade equipped with one CPU can be upgraded to a dual CPU server blade.

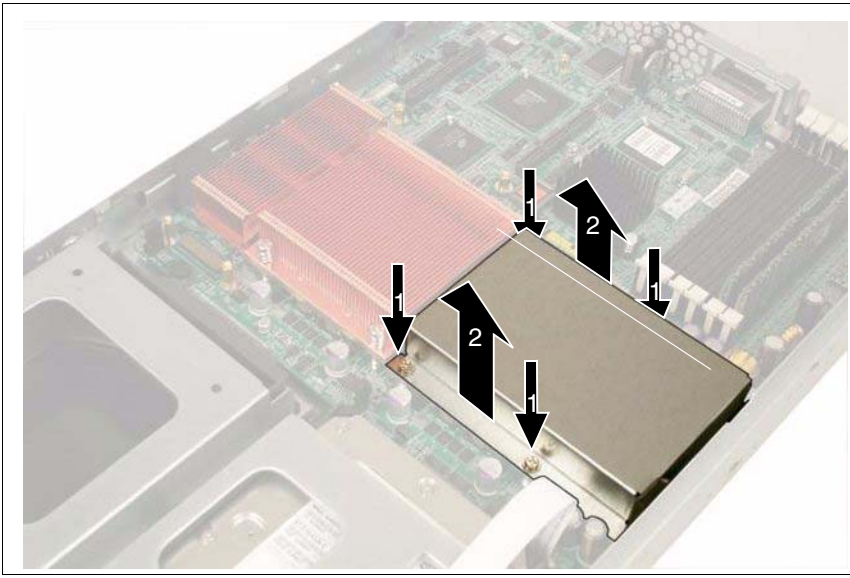
Installing/removing processors

Requirements

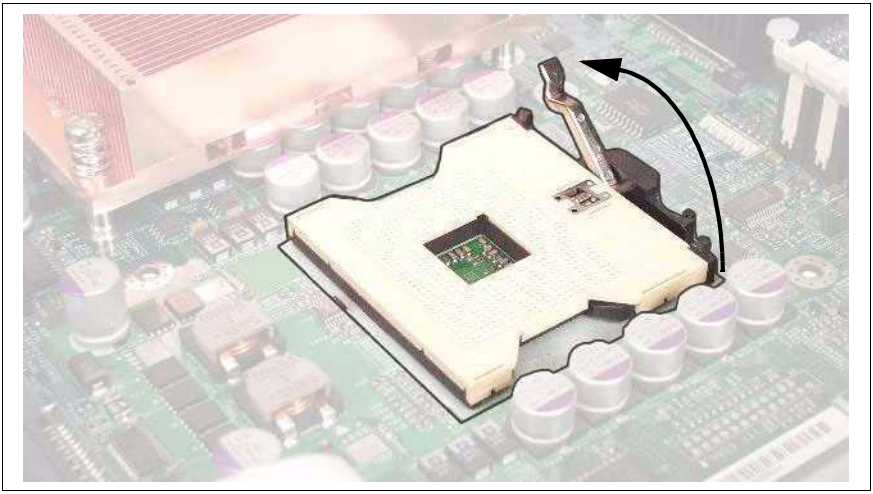
– The server blade has been removed

– The server blade cover has been removed

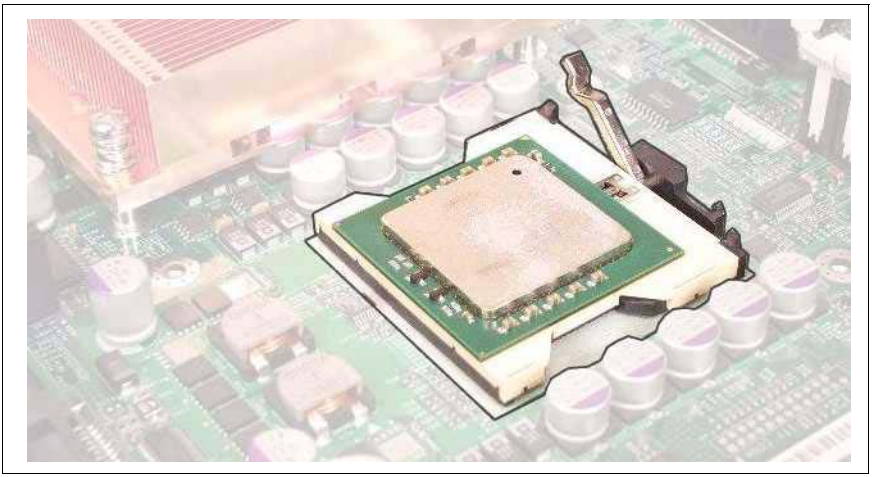
Removing the dummy heat sink



- ► Undo the four screws (1).
- ► Lift out the dummy heat sink in an upward direction (2).



► Undo the socket lever by pressing it to the side and pull it through an angle of approximately 90° in the direction of the arrow.



► Position the new processor over the CPU socket and press it carefully to insert it in the socket.

The processor can only be installed in one direction. Pay attention to the marking on one of the corners. Do not use force to push the processor into the socket, otherwise you risk damaging its pins.

- ► Lock the processor into the socket by returning the socket lever to its original position.
- ► Clean the surface of the processor using a lint-free alcohol wipe (e.g. CleanTex TexPad 801, available in specialist stores).

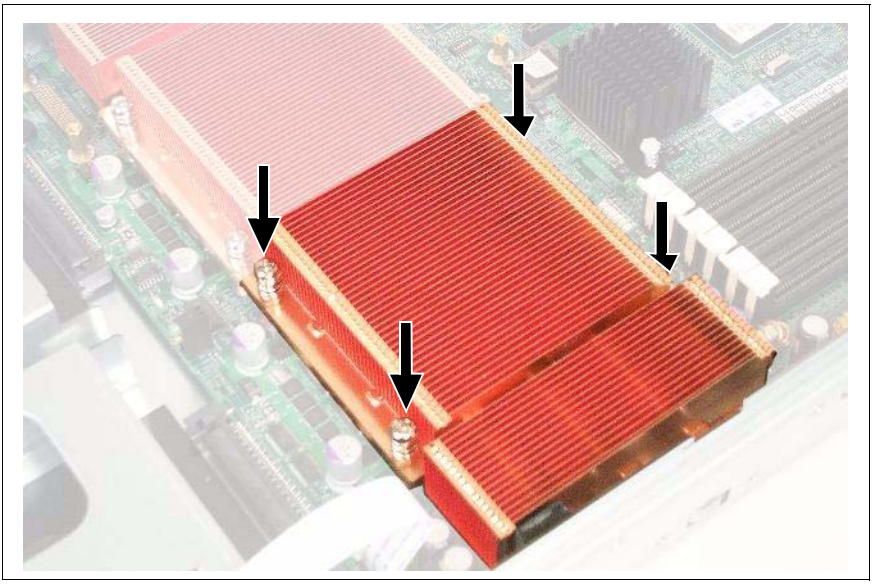
Never touch the processor core.

The processor sets the clock frequency automatically. It cannot be changed manually.

Installing the processor heat sink

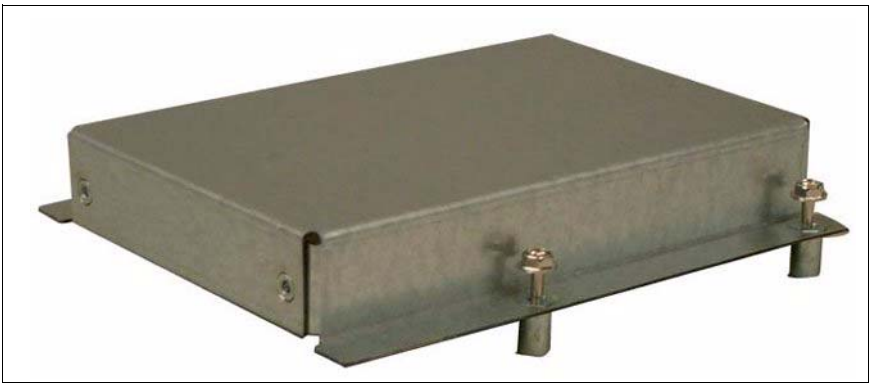
- To install the heat sink, the heat sink compound must be intact.
- Never install a processor without a heat sink, otherwise the processor may overheat and fail along with the system board.

- ► Apply a thin layer of heat sink compound to the underside of the heat sink.



- ► Now press the heat sink carefully onto the processor and screw the four heat sink screws tight.

If only one processor is installed in a server blade, a dummy heat sink must be installed over the second CPU socket to guarantee the stipulated cooling of the server blade components.



Replacing the Server Blade Lithium Battery

To permanently save system information, a lithium battery is installed on the *server blade* to power the CMOS memory. When the battery voltage is too low or the battery is empty, a corresponding error message is displayed. In this case the lithium battery must be replaced.

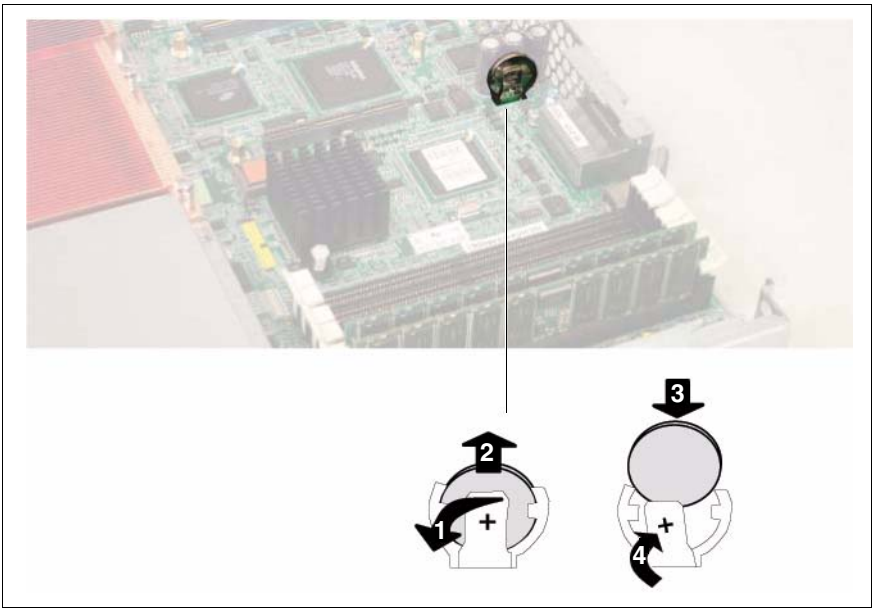
- Incorrect replacement of the lithium battery may lead to risk of explosion. Make sure the plus pole is facing up.
- The lithium battery must be replaced with an identical battery or with a battery type recommended by the manufacturer (CR2032).
- Do not throw lithium batteries into the trashcan. Please dispose of batteries in accordance with local government regulations.

Requirements

– The relevant *server blade* has been removed (see page 02-BX600-73)

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

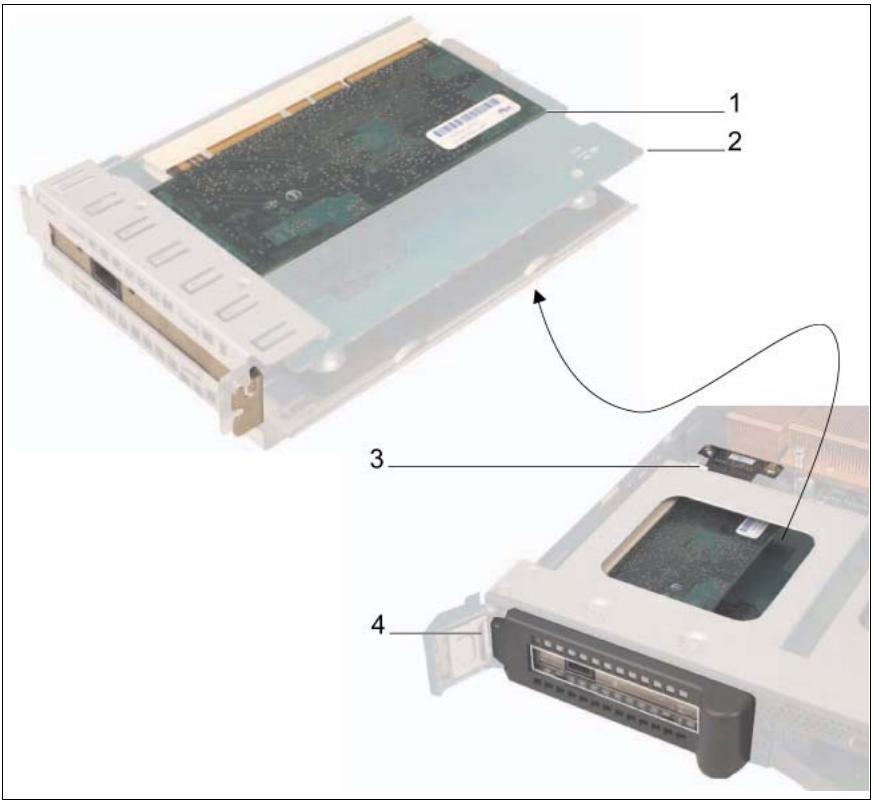
Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.



- Press the locking lever in the direction of the arrow (1), and pull the lithium battery out of its socket and remove it (2).
- Insert a new lithium battery of the same type into the socket (3) and let the lever snap back onto the battery to hold it in place (4).

Front PCI Expansion Module

Depending on the desired configuration, a server blade can be provided with a proprietary expansion module located on the front for a standard half-size PCI card via a PCI riser card. This PCI module will occupy the space of the internal SCSI hard disk module on the left side of the server blade.



1	Half-size PCI card
2	PCI riser card
3	Bridge module for connecting the PCI riser card to the main board of the server blade
4	Front bezel

Installing a PCI expansion module

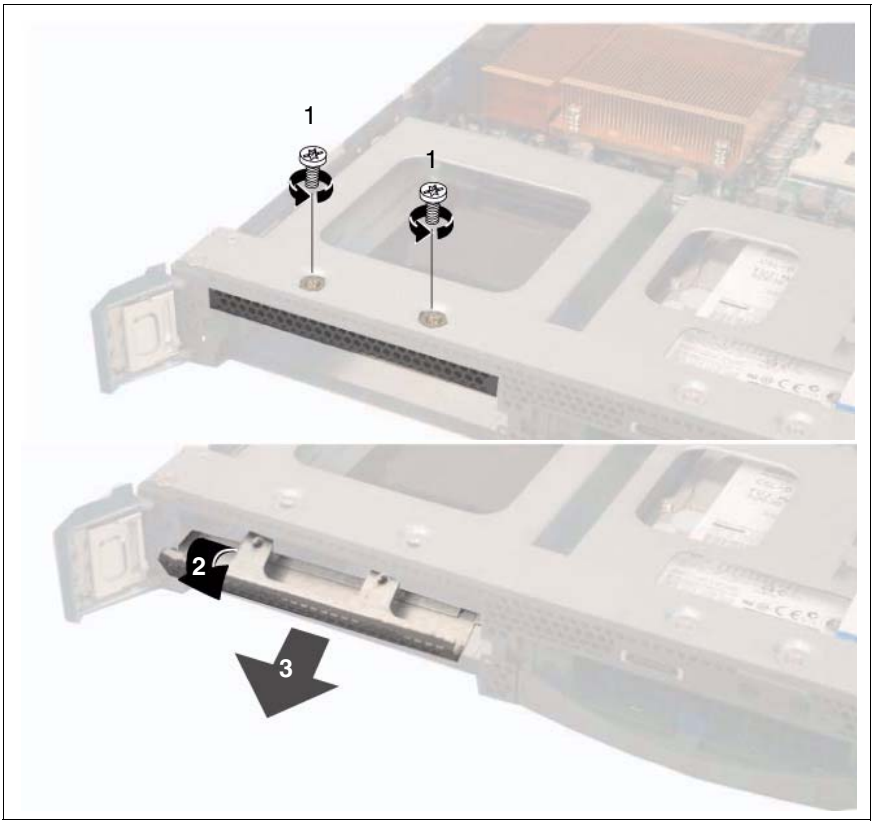
Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

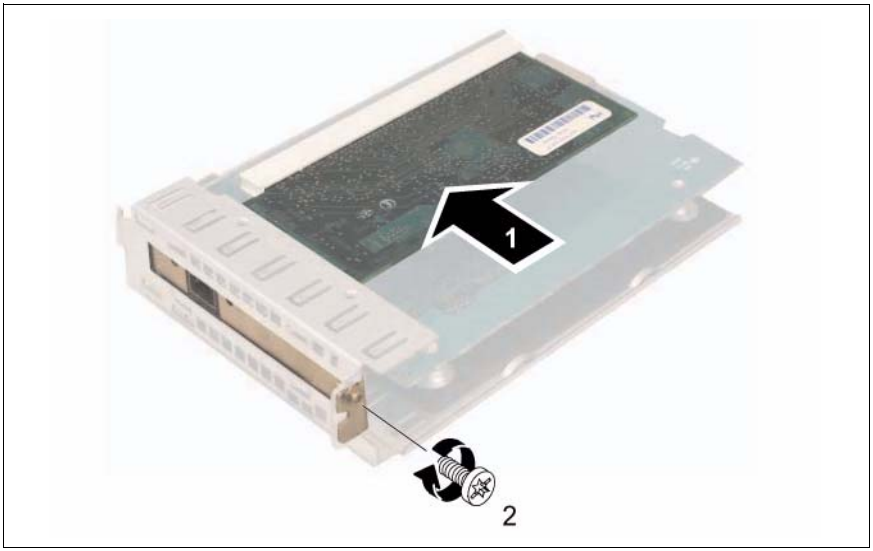
Server blades with PCI modules must be installed in slots 5 and 6 of the BX600 blade server system only. This is why the bend radius of front PCI cables requires about 100 mm of space (see page 02-BX600-97).

To install a PCI module perform the following steps:

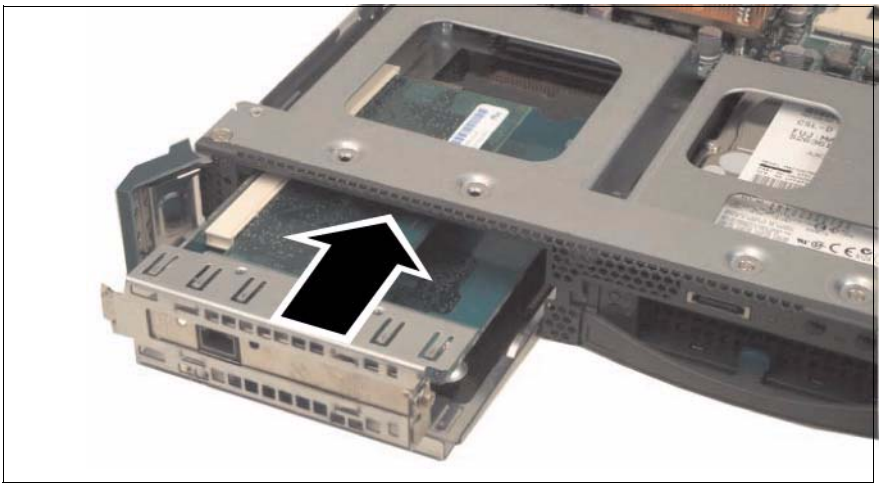
- ► Remove the SCSI hard disk drive module on the left side of the server blade (see page 02-BX600-77).



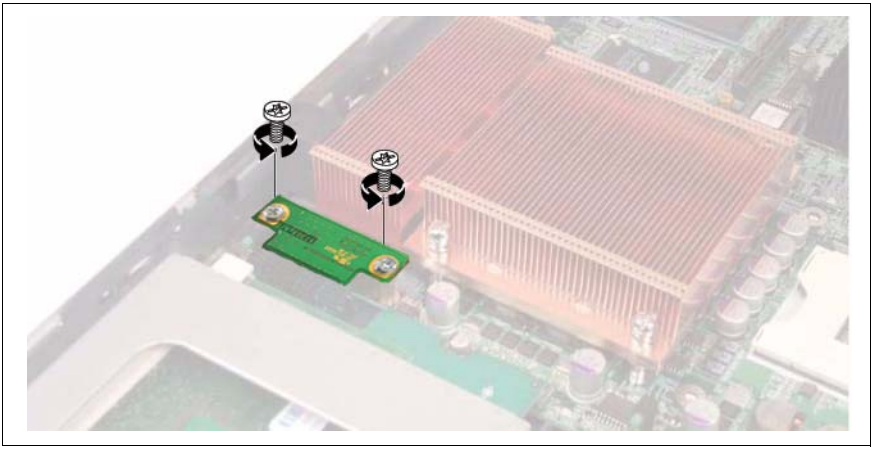
► Remove the bezel from above the SCSI hard disk module slot as shown in figure above. Unscrew the two screws (1), turn forward the bezel (2) and remove it (3).



► Push the PCI card into the socket of the riser card (1) and fix the PCI card with a cross-head screw (2).

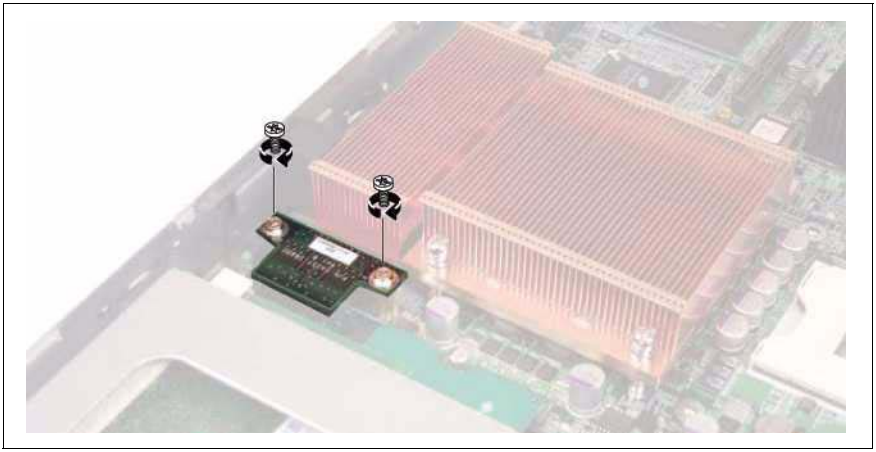


► Insert the assembly (PCI card and riser card) into the free hard disk module slot.



► Disconnect the termination board from the connector for the PCI bridge module by undoing the two screws and lifting the board out in an upward direction.

⚠ Keep the termination board in a safe place. If the PCI expansion module has to be removed again, the termination board must be reconnected to the socket of the IMB interface.



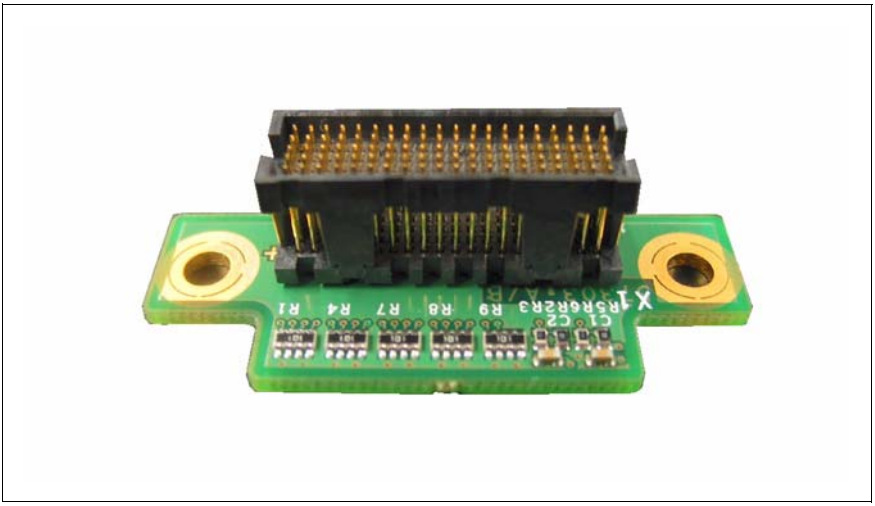
► Connect the PCI riser card to the blade server main board. Insert the bridge module and fix it with two screws.

- Fasten the PCI module using the two screws you undid when removing the bezel above from the hard disk drive module slot (see page 02-BX600-92).
- Attach the PCI module bezel as shown in the figure above.

Removing a PCI expansion module

Removal of a PCI expansion module is performed in reverse order.

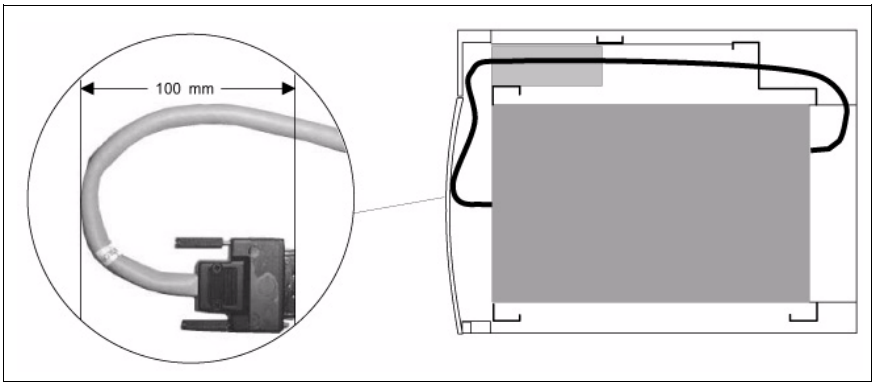
When you have removed a PCI expansion module, you must reconnect the termination board to the socket of the IMB interface. The figure below shows the termination board.



Cabling of PCI expansion modules

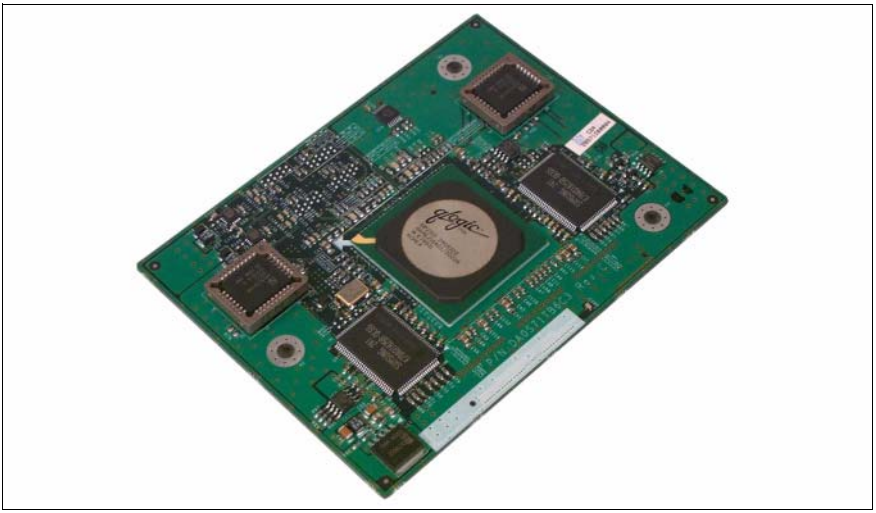
If a PCI expansion module is installed in a server blade, you will have to connect the PCI port to an external device on the back of the rack. To route the cable from the front to the back of the rack, use the side slots of the rack with a cable bezel as shown in the figure below. You may also route the cable to the back of the rack, using the space below the blade server chassis.

Server blades with SCSI boards installed via PCI expansion modules can only be installed in slots 5 and 6 of the system. This is why about 100 mm of space is required in front of the server due to the bend radius of the SCSI cable.



Fibre Channel Daughter Card

Depending on the desired configuration, server blades can be equipped with a Fibre Channel (FC) interface. For this purpose a server blade provides a proprietary PCI X 64-bit expansion slot for an FC daughter card.



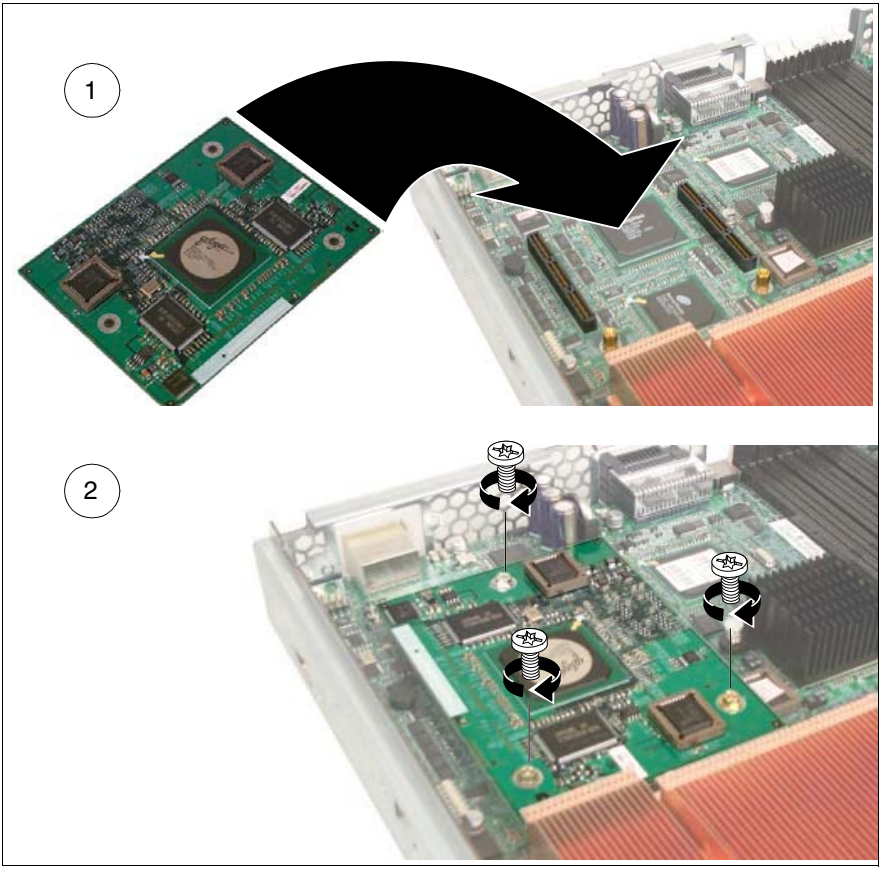
An FC daughter card provides two independent 2-GB serial Fibre Channel ports. The serial FC I/O interface goes through the midplane of the BX600 system unit to FC pass-thru blades in the rear.

Installing a Fibre Channel daughter card

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

- Remove the cover plate from the server blade (see page 02-BX600-76).



► Plug the FC daughter board into the two sockets on the left side of the server blade (1) and fix the FC daughter board with three screws (2).

Upgrading the Server Blade Firmware (BIOS and BMC)

Upgrading the server blade firmware using a USB floppy disk drive

Proceed as follows:

- Create a bootable floppy disk and copy the desired BIOS and/or BMC files onto it.
- Connect the breakout cable to the front panel of the relevant *server blade*. Connect the USB floppy disk drive to the other end of the breakout cable.
- Turn on or reboot the *server blade*. The firmware upgrades are performed automatically.

  You may have to change the sequence of boot devices in the BIOS to enable booting from floppy disk. For more information see the *BIOS Setup Description* and the *ServerStart User Guide*. Both manuals are contained on your *ServerBooks* CD (from version 5.208).

Upgrading the server blade firmware using TFTP

Proceed as follows:

- Install and run your TFTP server software and copy the desired BIOS and/or BMC firmware files into the TFTP file system root directory.

  You can use the TFTP software *pumpkin* contained on the *ServerStart* CD.

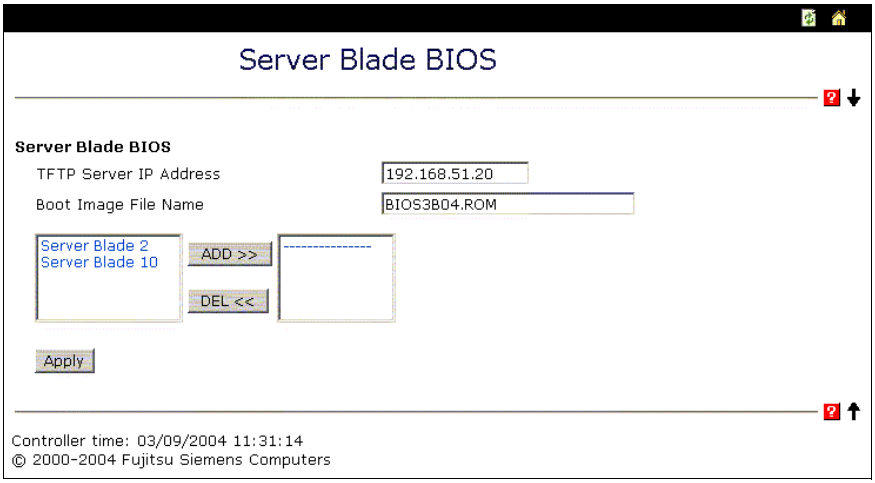
- Check the LAN connection by pinging the relevant *server blade*.

► Specify the IP address of the TFTP server providing the BIOS and/or BMC image files for the *server blade* firmware. Enter the path and file name for the *server blade* image files.

You can do this in two ways:

1. In the management console (Telnet) open the *TFTP Upgrade* submenu.
2. In the *Management Blade* WebUI choose *System Property - Environment Maintenance - Firmware Update - Server Blade BMC/BIOS Update*.

> **i** Due to security precautions, updating the BIOS and BMC via WebUI is only possible if the relevant *server blade* has been shut down beforehand. Otherwise the update option will not be offered in the WebUI menu.



► Use the *Add* and *Delete* buttons to add *server blades* to or remove them from the job list.

► Click the *Apply* button.

► Once the upgrade process is complete, reboot the *server blade*.

Recovering the Server Blade BIOS

This section describes the procedure for recovering the server blade BIOS.

Use this procedure only in case of failure.

Requirements

– The blade server is connected to the power line.

– The server blade is switched off.

Creating a BIOS Flash Diskette

► Unzip the ZIP file `s71`*xxxx*`.zip` to your disk (*xxxx* = BIOS version).

You can download the files required for creating the *BIOS flash diskette* from the software pool http://service.abg.fsc.net/support/softwareAssist.asp.

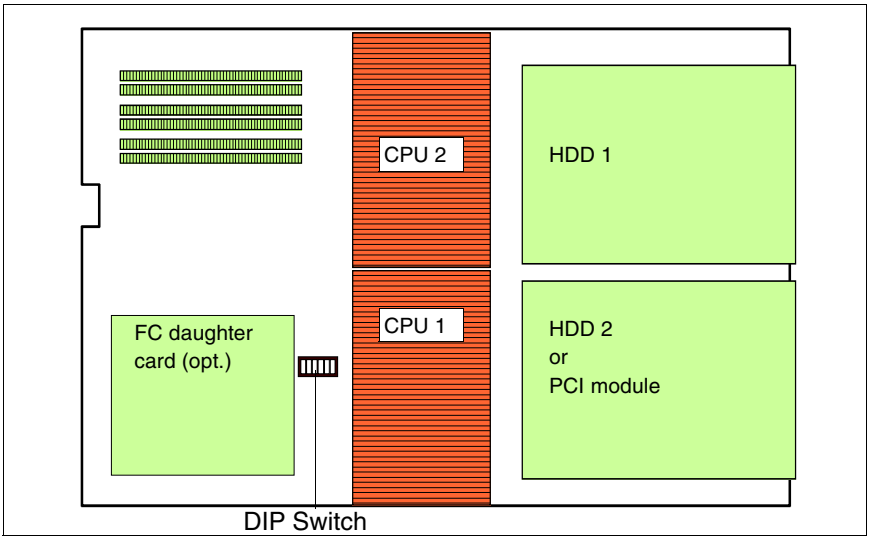
► Insert a diskette into your floppy drive.

► Run the program *crisdisk* to create a *BIOS flash diskette*.

Recovering the Server-Blade BIOS

► Connect the mouse, keyboard and monitor to the KVM blade on the rear of the server (see page 02-BX600-40).

► Remove the server blade from the blade server chassis (see page 02-BX600-73) and open the server blade (see page 02-BX600-76).



- Turn ON switch 3 of the main board DIP switch.
- Close the server blade and insert it into the blade server chassis again (see page 02-BX600-73).
- Insert the *BIOS flash diskette* in the USB floppy drive and connect it to the USB port of the server blade using the USB break out cable (see page 02-BX600-31).
- Press the KVM button on the server blade control panel (see page 02-BX600-31) to route the keyboard, mouse and monitor to the KVM blade.
- Switch ON the server blade, see page 02-BX600-37.

After a short beep sound the server blade will be in recovery mode. The processing status of the BIOS upgrade is displayed at the KVM console. When the BIOS recovery process has finished, information about the next steps to be performed will be displayed at the KVM console.

- Switch off the server blade.
- Remove the server blade from the blade server chassis and open it.
- Turn OFF switch 3 of the main board DIP switch.
- Close the server blade and insert it into the blade server chassis.

Now you the server blade is ready for use again.

The Switch Blade

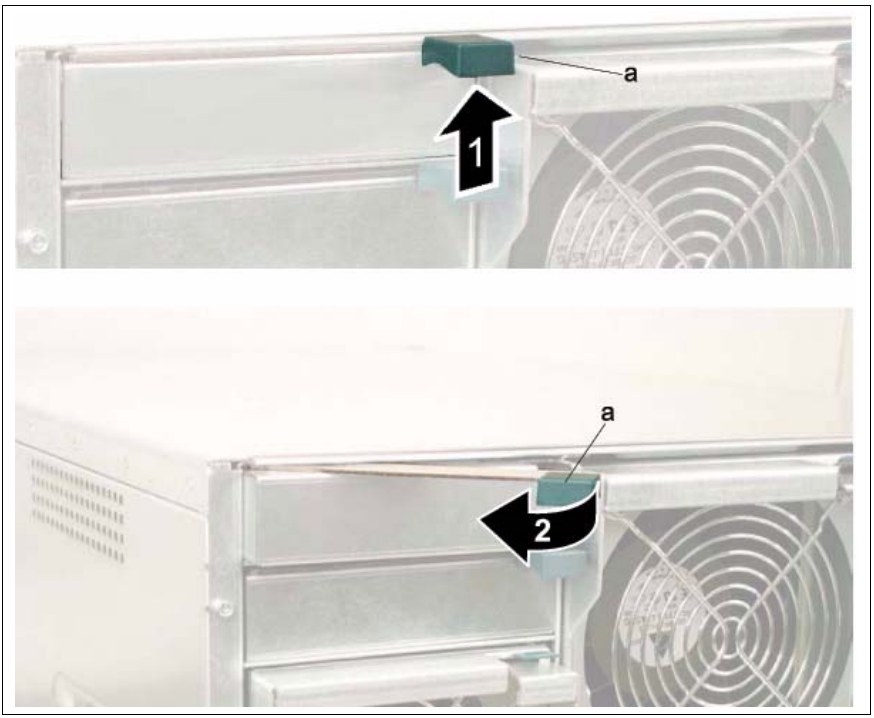
Removing/installing Switch Blade Dummy Modules

No Requirements

Removal

All unoccupied slots in the blade server system are fitted with dummy modules to ensure that the electromagnetic emission properties of the system are observed and that the system components are properly cooled.

i Before adding a *switch blade* to a new mounting location, you must remove the dummy module from the relevant slot.



► Press the spring (1) on the underside of the handle (a) to unlock it.

► Swing the handle (a) in the direction of the arrow (2) until the locking mechanism of the dummy module disengages.

► Remove the dummy module from the slot (2).

Make sure you reinstall a *switch blade* or dummy module in every empty installation slot as soon as possible to satisfy cooling requirements and comply with applicable EMC regulations.

Installation

Installation of the *switch blade* dummy module unit is performed in reverse order.

Removing and Installing Switch Blades

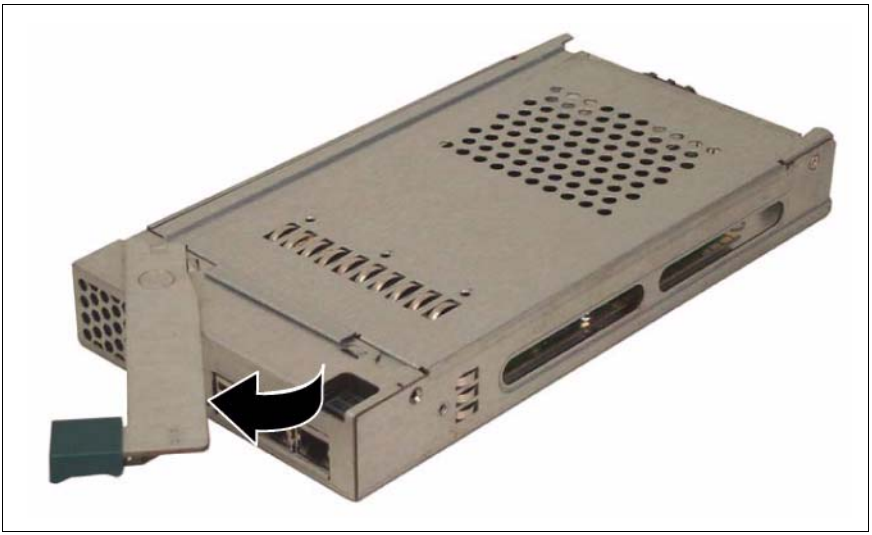
Installing

Before installing a new *switch blade*, you must remove the dummy module from the relevant slot.

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

Always reinstall *switch blades* or dummy blades as soon as possible so that all two mounting locations are continuously occupied. This is necessary in order to satisfy cooling requirements and to comply with applicable EMC regulations.



- Disengage the locking mechanism of the switch blade by swinging the handle in the direction of the arrow.

- Push (1) the switch blade as far as possible into the relevant slot (here slot 2).
- Swing up (2) the eject handle (a) of the switch blade until the locking mechanism of the switch blade engages.

Removal

Removal of the *switch blade* is performed in reverse order.

Upgrading the Switch Blade Firmware

Before updating the firmware, you need to assign an IP address to each *switch blade*.

Proceed as follows:

- Switch on the blade server system

```
                              Console Menu        page_root
------------------------------------------------------------------------------
(1) Management Agent
(2) Emergency Management Port
(3) Console Redirection
(4) TFTP upgrade
(5) Logout
(6) Reboot Management Blade
(7) System Information Dump
 Enter Selection: 3
```

- On the *Management Blade* console select *Console Redirection*.

```
      Console Redirection Table                    page_0.
------------------------------------------------------------------------------
(1) Console Redirect Server Blade
(2) Console Redirect Switch Blade
(3) Set Return Hotkey , Ctrl+(a character) : 0
Enter selection or type (0) to quit: 2
```

- In the Console Redirection Table choose *Console Redirect Switch Blade*

```
      Console Redirection Switch Blade             page_3_2.
------------------------------------------------------------------------------
(1) Console Redirect Switch Blade_1
(2) Console Redirect Switch Blade_2
Enter selection or type (0) to quit: 1
```

- Specify the desired *switch blade*.

```
      CLI session with the Switch Blade is opened.
      To end the CLI session, enter [Exit].

Console>enable
Console#config
Console(config)#interface vlan 1
Console(config-if)#ip address 10.50.50.51 255.0.0.0
Console(config-if)#exit
Console#show ip interface
 IP address and netmask: 10.50.50.51 255.0.0.0 on VLAN 1,
 and address mode: User specified

Console#
```

- Enter the commands above.

  Please bear in mind that the entries for IP address and subnetmask are merely examples and will probably differ from your system.

- You can check the newly established LAN connection by pinging the *switch blade* on the client machine.
- Install and run your TFTP server software and copy the desired firmware file into the TFTP file system root directory.
- Start an internet browser on the client server. In the address input field, enter the IP address specified above. Enter `admin` as both user name and password.
- In the navigation bar choose *Flash/File* and enter your TFTP server's IP address and file name.
- Click the *Transfer from Server* button.
- Once the upgrade process is complete, choose *Reset* from the navigation.

  After resetting, the *switch blade* will reboot. However, all settings specified before (IP address etc.) will be lost and must be reentered on the management console.

The Fibre Channel Pass-Thru Blade

Exchanging an FC pass-thru Blade

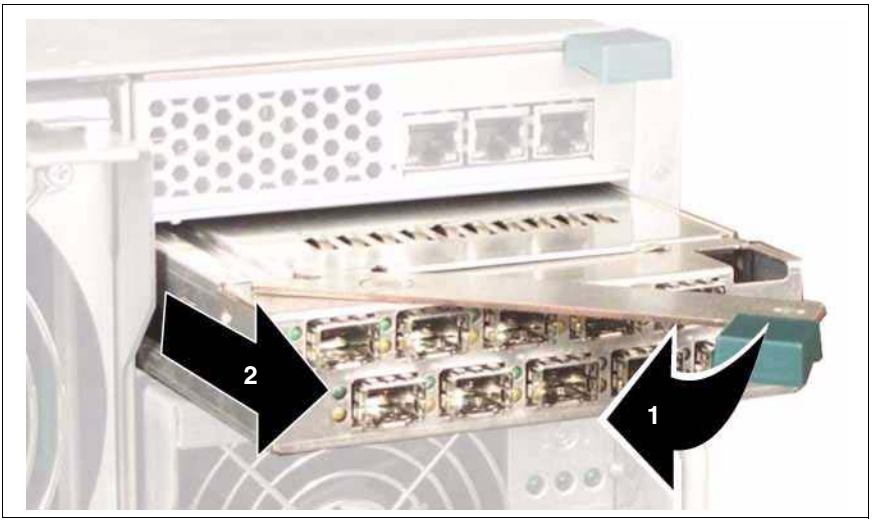
Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

Always reinstall *FC pass-thru blades* or dummy blades as soon as possible so that all two slots are continuously occupied. This is necessary in order to satisfy cooling requirements and to comply with applicable EMC regulations.

Removal

► Press the spring on the underside of the eject handle to unlock it.



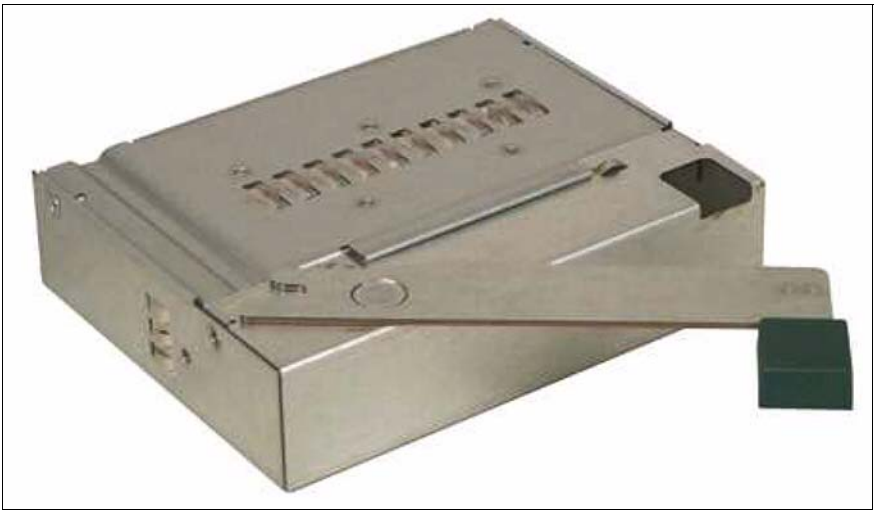
- ► Swing the eject handle (1) of the FC pass-thru blade in the direction of the arrow until the locking mechanism disengages and the blade is ejected a few centimeters.
- ► Remove the FC pass-thru blade from the slot (2).

Installation

The FC pass-thru blade is inserted using these instructions in reverse order.

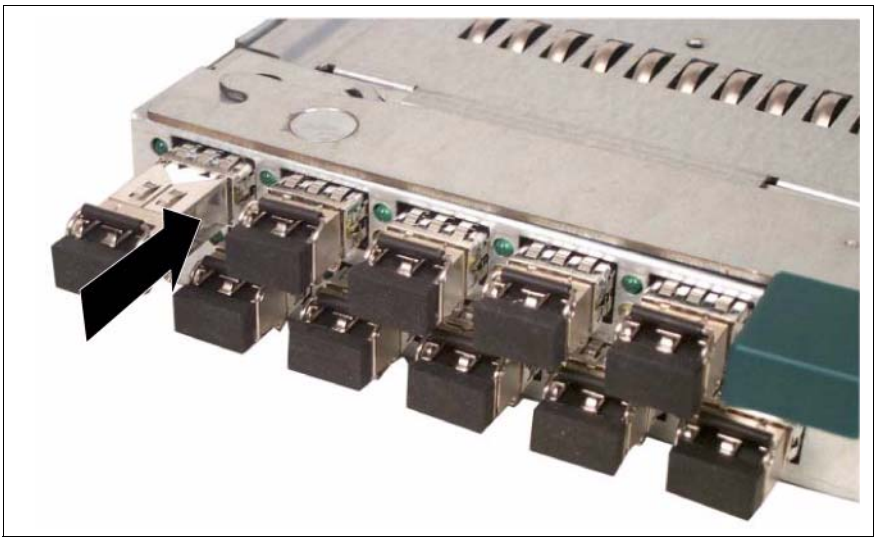
If you remove the FC pass-thru blade and do not replace it with a new one, you must insert a dummy module into the empty slot to ensure cooling and to comply with the applicable EMC regulations (regulations on electromagnetic compatibility).

Make sure that the dummy module engages properly in the slot.



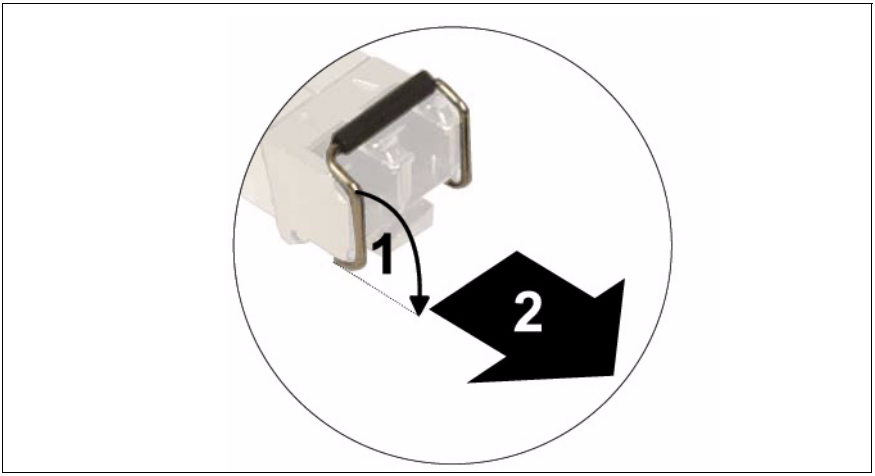
Inserting a Fibre Channel SFP module

For each server blade connected via Fibre Channel, SFP modules must be plugged into the appropriate FC pass-thru blade slots. For information on the port assignment see page 02-BX600-49.



► Push the SFP with the label facing upward into the slot assigned to the server blade to be connected.

Removing an SFP module



► Swivel the locking clip in the direction of the arrow (1) to disengage the locking mechanism of the SFP module and pull it out of the slot (2).

The Management Blade

Removing or Installing Management Blades

Electrostatically discharge yourself by touching a grounded object before handling the components. Be aware that electrostatic-sensitive devices (ESDs) should only be held at the edges and placed on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. For this purpose wear an electrostatic wristband or use a suitable grounding cable that connects you to the external chassis of the system unit.

Removing a management blade

► Press the spring on the underside of the eject handle to unlock it.

- Swing the eject handle (a) of the management blade in the direction of the arrow until the locking mechanism disengages and the blade is ejected a few centimeters.

- Remove the management blade from the slot.

Installing a management blade

Installation of the *management blade* is performed in reverse order.

Replacing the Management Blade Lithium Battery

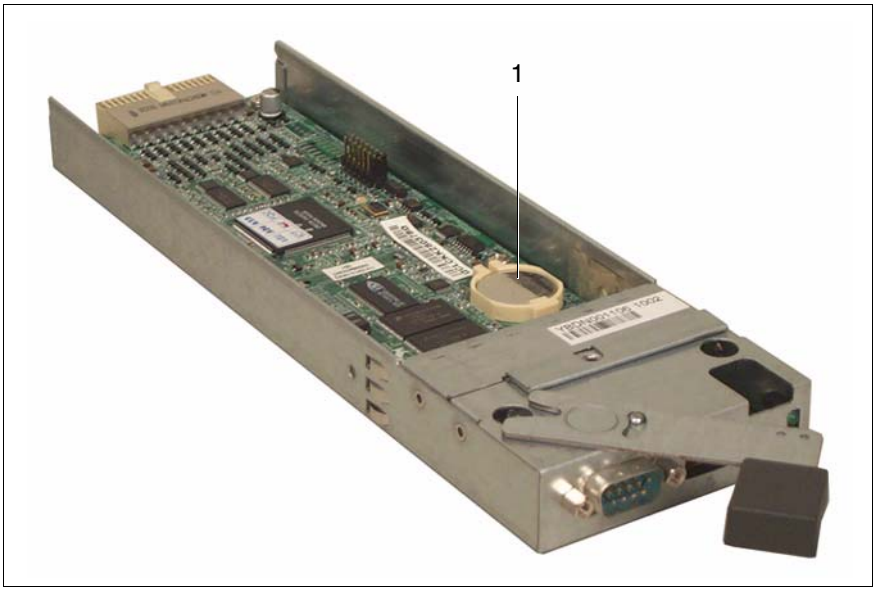
To permanently save system information, a lithium battery is installed on the *server blade* to power the CMOS memory. When the battery voltage is too low or the battery is empty, a corresponding error message is displayed. In this case the lithium battery must be replaced.

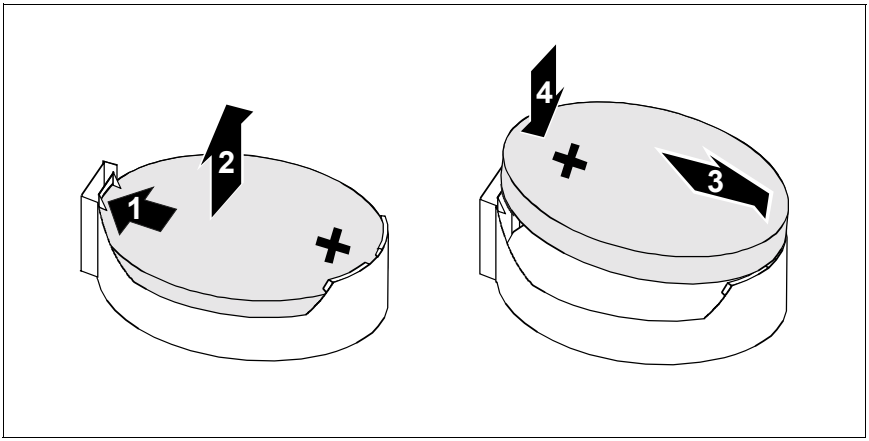
– Incorrect replacement of the lithium battery may lead to risk of explosion. Make sure the plus pole is facing up.

– The lithium battery must be replaced with an identical battery or with a battery type recommended by the manufacturer (CR2032).

– Do not throw lithium batteries into the trashcan. Please dispose of batteries in accordance with local government regulations.

The figure below shows the location of battery (1) on the *management blade* board.





- Push the locking spring in the direction of the arrow (1) so that the lithium battery snaps out of the holder, and pull the battery out (2).
- Slide the new battery of identical type into the holder (3), and push it in the direction of the arrow (4) until it locks in place.

Upgrading the Management Blade Firmware

This section describes the procedures for

– **Upgrading** the *management blade* **BMC** via the LAN,

– **Rebuilding** the *management blade* **default settings**,

– Performing an **emergency flash** of the *management blade* firmware.

Upgrading the BMC via the LAN

The procedure described below is to be performed for each of both *management blades*.

Requirements

– The blade server is connected to the power line.

– The *management blade* LAN port is connected to a client PC.

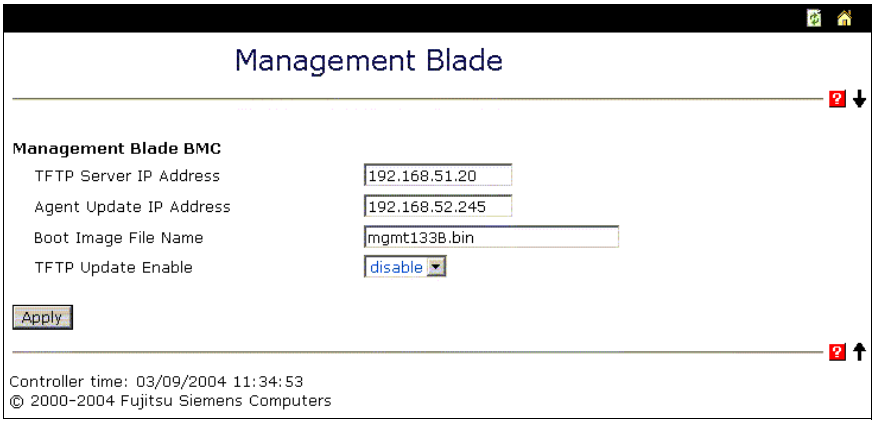
Proceed as follows:

- Install and run your TFTP server software and copy the desired firmware file (`*.bin`) into the TFTP file system root directory.
- Check the LAN connection by pinging the desired *management blade*.
- Specify the IP address of the TFTP server providing the BMC image file for the *management blade* firmware. Enter the path and file name for the *management blade* image file.

  You can do this in two ways:

  1. Open the *TFTP Upgrade* submenu in the management console (Telnet). Enable the *Management Blade/TFTP Update* option.
  2. Choose *System Property - Environment Maintenance - Firmware Update - Management Blade BMC Update* in the *management blade* WebUI.

     The IP address to be supplied in the field *Agent Update IP Address* is only temporarily used. Enter any IP address which is not used in the LAN segment of the server.



- Click the [Apply] button.
- Once the upgrade process is complete, reboot the *management blade*.

Rebuilding the default settings

There are two ways to rebuild the default settings:

– The preferred way
Rebuilding with HyperTerminal
In this case you can control the procedure.

– The second way, only if you have no chance to connect the *management blade*
Rebuilding without HyperTerminal
In this case you have no control over the procedure.

Requirements

– Power cords are connected.

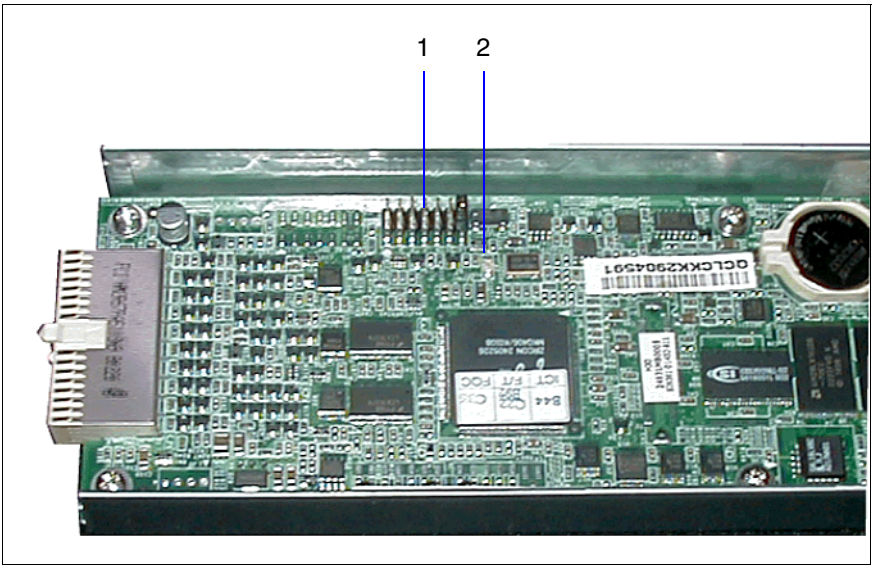
Rebuilding with HyperTerminal

The procedure described below is to be performed for each of both *management blades*.

► Connect the serial cable from the *management blade* to an external PC.

► Activate HyperTerminal (see page 02-BX600-56).

► Remove the *management blade* (see page 02-BX600-115).



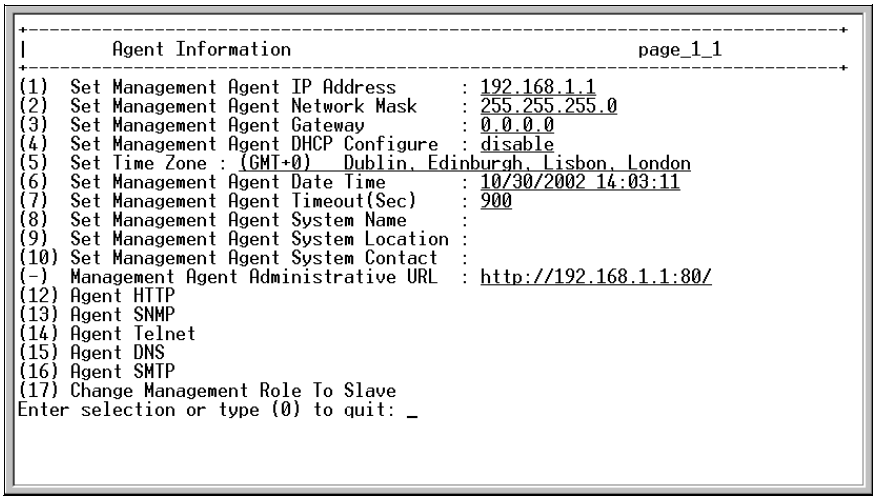
- Set jumper from position 13 - 14 (normal mode) to position 1 - 2 (load default settings).
- Reinstall the *management blade*.
- Reactivate HyperTerminal.

```
+-------------------------------------------------------------------------------+
|        Management Blade                                        page_1_2_2     |
+-------------------------------------------------------------------------------+
(-) Management Blade Run Mode           : master
(-) Management Blade Status             : ok
(-) Management Blade Manufacture        : FSC
(-) Management Blade Manufacture Date   : 07/16/2002 19:57:00
(-) Management Blade Serial Number      : SQ229KC00286
(-) Management Blade Product Name       : BX300 Management Blade
(-) Management Blade Model Name         : S26361-D1432-A11
(-) Management Blade Hardware Version   : H3D
(-) Management Blade Firmware Version   : 1.12
(-) Management MAC Address              : FF:FF:FF:FF:FF:FF
Enter selection or type (0) to quit:
SuperI/O.......OK
SRAM...........OK
Flash..........OK
NIC............OK
Boot Code Rev  1.9D

Set Default OK, Please remove Jumper ._
```

- Remove the *management blade*.
- Set jumper from position 1 - 2 to position 13 - 14.
- Reinstall the *management blade*.

The default settings are rebuilt.


Agent Information page_1_1
(1) Set Management Agent IP Address : 192.168.1.1
(2) Set Management Agent Network Mask : 255.255.255.0
(3) Set Management Agent Gateway : 0.0.0.0
(4) Set Management Agent DHCP Configure : disable
(5) Set Time Zone : (GMT+0) Dublin, Edinburgh, Lisbon, London
(6) Set Management Agent Date Time : 10/30/2002 14:03:11
(7) Set Management Agent Timeout(Sec) : 900
(8) Set Management Agent System Name :
(9) Set Management Agent System Location :
(10) Set Management Agent System Contact :
(-) Management Agent Administrative URL : http://192.168.1.1:80/
(12) Agent HTTP
(13) Agent SNMP
(14) Agent Telnet
(15) Agent DNS
(16) Agent SMTP
(17) Change Management Role To Slave
Enter selection or type (0) to quit: _

Rebuilding without HyperTerminal

- Remove the *management blade*, see page 02-BX600-115.
- Set jumper from position 13 - 14 (normal mode) to position 1 - 2 (load default settings).
- Reinstall the *management blade*.
- Wait for about 1 minute.
- Remove the *management blade*.
- Set jumper from position 1 - 2 to position 13 - 14.
- Reinstall the *management blade*.

The default settings are rebuilt.

Emergency Flash of the Management Blade Firmware

With the procedure described below you can upgrade the *management blade* firmware, if a BMC upgrade via LAN is not possible.

Requirements

– The blade server is connected to the power line.

– The files *all.bin*, *upgrade.bat* and *uplod.exe* exist in a folder of the client PC disk.

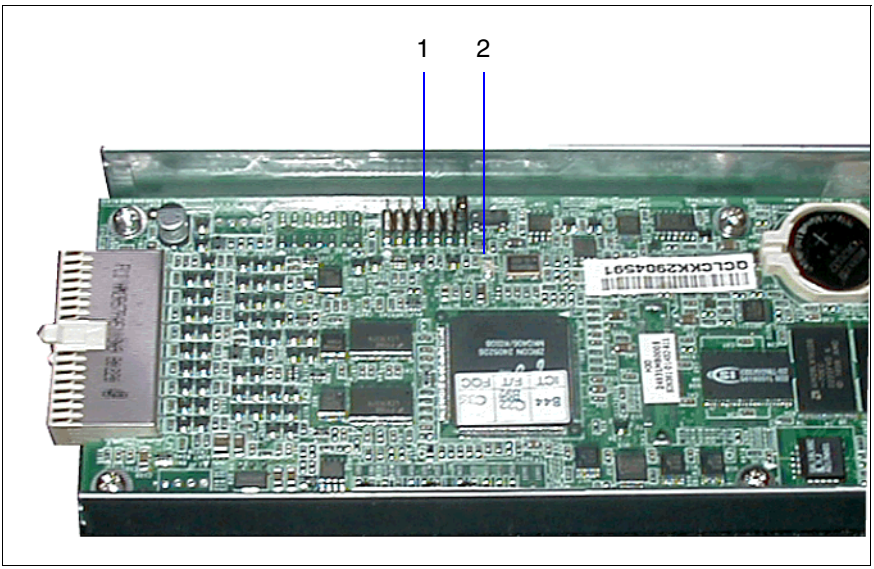
> **i** You can download the files required for the BMC upgrade from the software pool http://service.abg.fsc.net/support/softwareAssist.asp.

Proceed as follows:

► Connect the serial cable from the *management blade* to an external PC.

► Activate HyperTerminal (see page 02-BX600-56).

► Remove the *management blade* (see page 02-BX600-115).



► Set jumper at jumper JP2 (1) from position 13 - 14 (normal mode) to position 1 - 2 (recovery mode).

- Press the reset button (2), to reboot the *management blade*.
- Insert the *management blade* again (see page 02-BX600-115).

On the HyperTerminal screen the upgrade menu will be displayed as shown in figure below:

```
SuperI/O.......OK
SRAM...........OK
Flash..........OK
NIC............OK
Boot Code Rev  0.05I
Hi, You are in Download Mode
  (1) Upgrade Firmware from Serial Port
  (2) Upgrade Firmware from Network
  (3) Network Parameters
  ------------------------------------
  Choose: _
```

- Enter 1 to upgrade the firmware via the serial port.
- Close the HyperTerminal session.
- Execute the batch job *update.bat* in the folder containing the files *all.bin* and *uplod.exe*.

The status of the firmware upgrade process is displayed on a console window as shown in figure below.

When the console window has closed, the upgrade process has finished.

- Open HyperTerminal again.
- Remove the *management blade* (see page 02-BX600-115).
- Set jumper from position 5 - 6 to normal mode position 13 - 14.
- Press the reset button, to reboot the *management blade*.
- Insert the *management blade* again (see page 02-BX600-115).

Now you can configure the *management blade* settings via HyperTerminal (see page 02-BX600-55).

The SCSI Blade

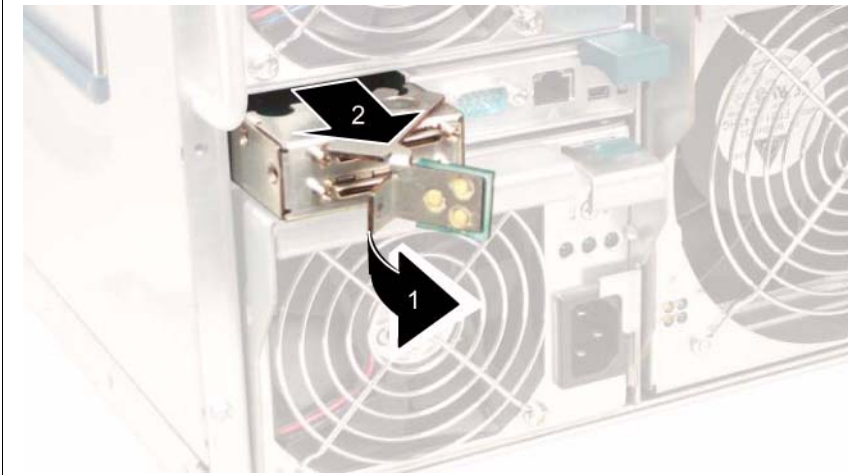
Removing and Installing the SCSI Blade

The SCSI blade must always be plugged in to ensure cooling and to comply with the applicable EMC regulations (regulations on electromagnetic compatibility).

No Requirements

Removing the SCSI Blade

► Unscrew the screw to the left of the SCSI blade to disengage the locking mechanism of the eject handle.



- Swing the eject handle (1) of the SCSI blade in the direction of the arrow until the locking mechanism disengages and the blade is ejected a few centimeters.
- Remove the SCSI blade from the slot (2).

Installing the SCSI Blade

Installation of the SCSI blade is performed in reverse order.

Power Supply Units

Removing and Installing Power Supply Units

In its basic configuration the system comes with two hot-swappable power supply units. The power supply units automatically adjust to any power voltage in the range (100 V - 127V or 200 V - 240 V).

Removal

Replace the defective power supply unit as soon as possible to restore redundancy, avoid airflow disruption, satisfy cooling requirements and comply with applicable EMC regulations.

The installation bay should not be vacant for more than five minutes while the server is on. Exceeding the five-minute limit may cause damage to certain components.

If one power supply unit has failed, do not remove any fan modules!

Requirements

- Check the FAN LED of the power supply units on the back of the system (see page 02-BX600-34) to determine which power supply unit is defective.
- **First disconnect** the power supply cable of the defective PSU from the mains.
- Remove the power supply cable from the insulated socket of the defective PSU.

– the power cord of the defective power supply unit has been disconnected

Be careful! The PSU can be **very hot**!

► Press the locking button (a) to disengage the locking mechanism of the PSU handle.

► Swivel the handle completely in the direction of the arrow to unlock the PSU from the chassis and pull it out of the bay.

Installation

Installation of the power supply unit is performed in reverse order.

The Midplane

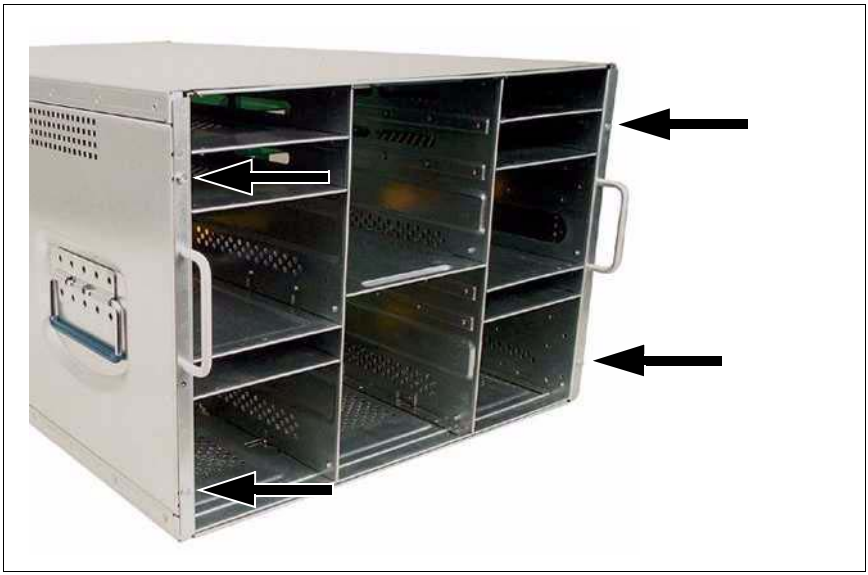
Replacing or Installing the Midplane

Requirements

- Server has been switched off
- Power cords have been disconnected
- All server blades have been removed (see page 02-BX600-73)
- All switch blades and management blades have been removed (see page 02-BX600-106 and page 02-BX600-115)
- All fan modules and power supply units have been removed
- The KVM blade and the SCSI blade have been removed

Removal

Step 1: Removing the rear chassis

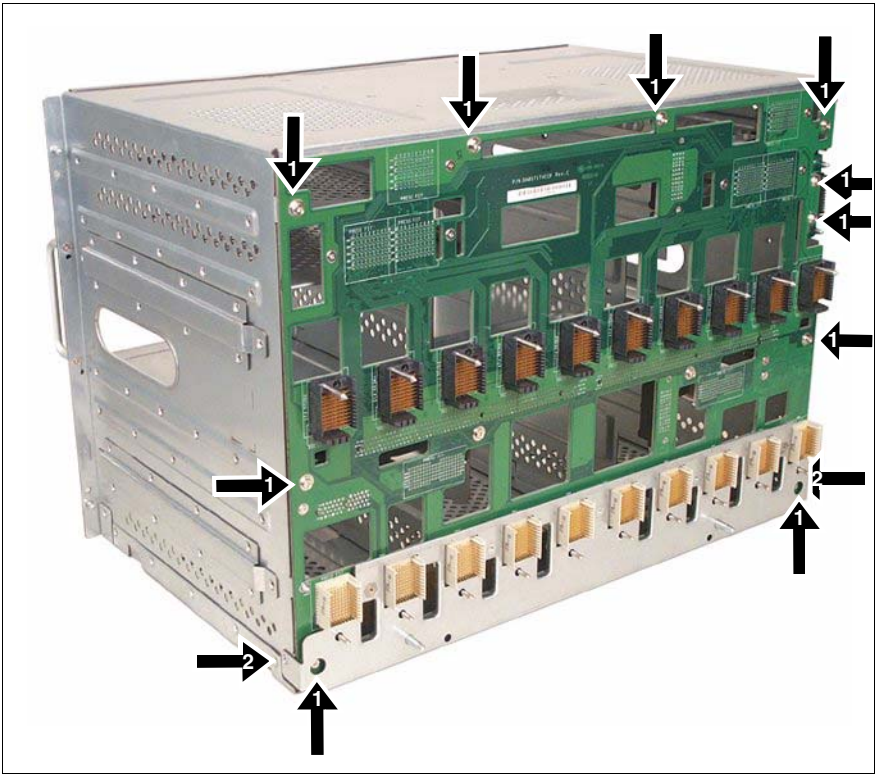


► Unscrew the four screws which hold the rear chassis.

► Carefully pull the rear chassis out of the system unit chassis by its two handles (1) until you can see the warning label (2) and the arrows on the top of the rear chassis.

► Hold the rear chassis by the cut-outs on the sides and pull it all the way out of the server chassis.

Step 3: Removing the midplane



- Remove the 10 screws (1) on the back of the rear chassis and the two countersunk screws (2) on the sides of the rear chassis.
- Lift up the midplane and carefully remove it from its installation location.
- Rest the midplane on top of the server casing.

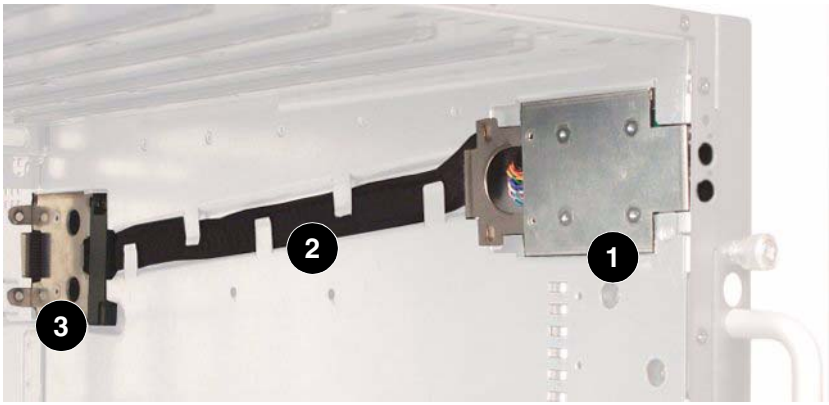
Installation

- Installation of the midplane is performed in reverse order.

Replacing the Front Control Kit

The front control kit consists of the front control panel (containing indicators and controls on the server front), the connection cable, and the docking board which is connected to the midplane.

After exchanging the front control panel the chassis ID PROM, which provides the serial number and the revision of the server, is to be programmed.



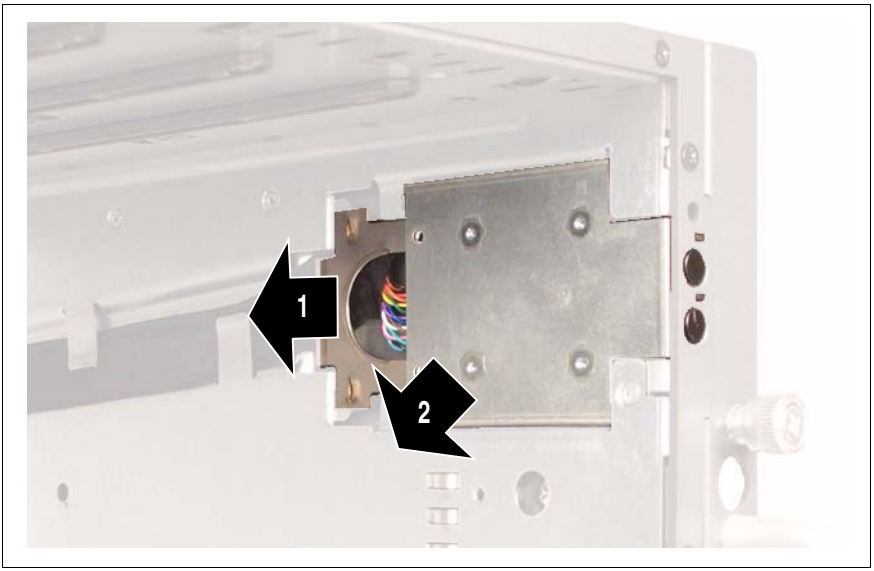
1	**Front control panel** See page 02-BX600-31 for detailed information.
2	**Front panel connector** Connects the front control panel (see page 02-BX600-10) to the docking board
3	**Docking board** Connects the front control panel board (see page 02-BX600-10) to the midplane

Requirements

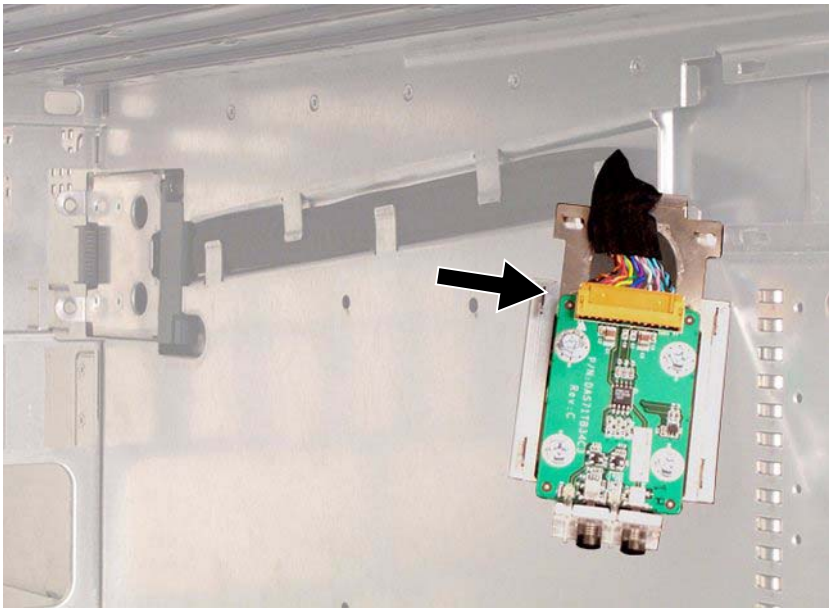
– Server has been switched off
– Power cords have been disconnected
– All server blades have been removed (see page 02-BX600-73)

Removal

Step 1: Removing the front control panel

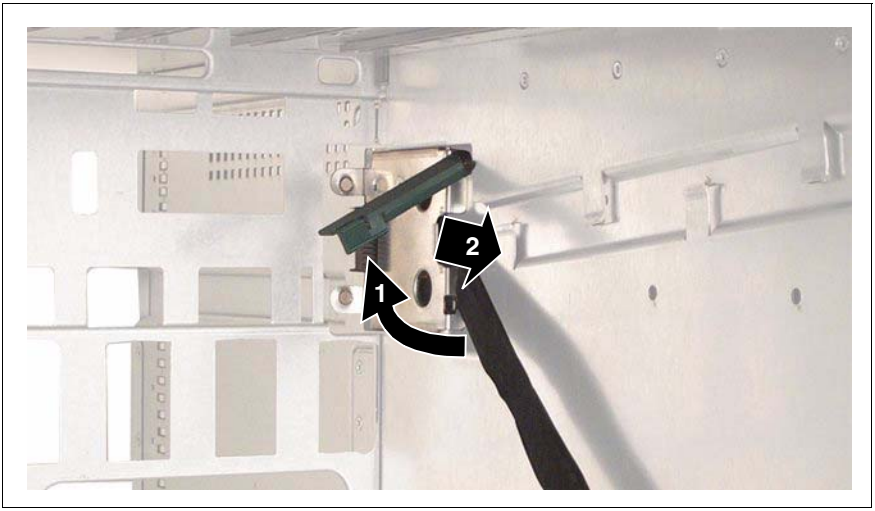


- Push the housing of the front control panel slightly in the direction of the arrow (1) to disengage it from the system unit chassis.
- Now tilt and pull the front control panel out of its recess in the system unit chassis in the direction of the arrow (2).



- ► Pull the plug of the connection cable out of the connector on the front control panel
- ► Remove the connection cable from the cable guide.

Step 2: Removing the docking board



- Swivel the locking lever in the direction of the arrow (1) to disengage the docking board.
- Lift the docking board (2) out of its recess in the system unit chassis in the direction of the arrow.

Installation

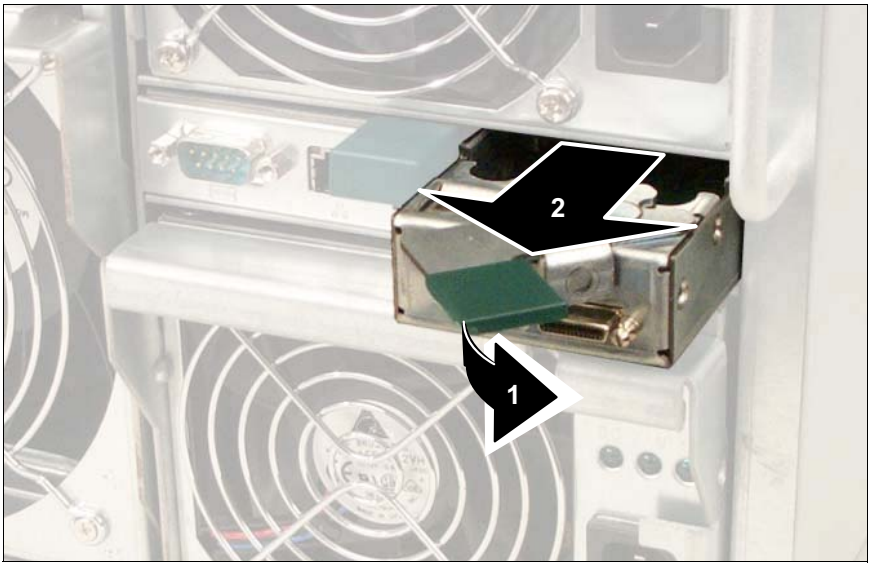
- Installation of the front control kit is performed in reverse order.

Other Boards

Removing or Installing the KVM Blade

Removing the KVM blade

► Unscrew the screw to unlock the eject handle of the KVM blade.



- Swing the eject handle (1) of the KVM blade in the direction of the arrow until the locking mechanism disengages and the blade is ejected a few centimeters.
- Remove the KVM blade from the slot (2).

The KVM blade must always be plugged in to ensure cooling, to comply with the applicable EMC regulations (regulations on electromagnetic compatibility) and for fire protection.

Installing

Installation of the KVM blade is performed in reverse order.

System Fans

The system can continue operating without one fan.

The defective fan must be replaced within a reasonable amount of time (max. 2 minutes).

Replacing the Fan Unit

If a system error has occurred and the front identify/fault LED is blinking, the error must be resolved any additional components are added or removed.

Make sure that all necessary power supply units are inserted and functioning before you remove and/or install one of the fan units!

► Press the locking button (green) to disengage the locking mechanism of the unit handle.

► Swivel the handle completely down to disengage the locking mechanism and pull out the rear fan unit.

Installation

To mount a fan unit, follow these instructions in the reverse order.

Replacing a Fan in the Unit

- ► Pull (1) the locking handle (green) to disengage the fan.
- ► Remove the fan from the unit (2).

To mount a fan, follow these instructions in the reverse order.

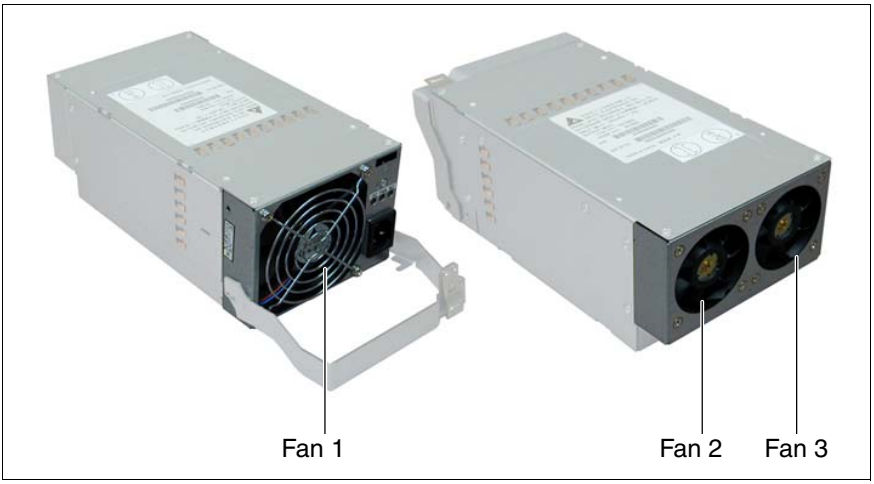
Replacing the PSU Fans

A defective power supply unit must be replaced as a whole. Do not try to replace individual fans within a PSU.

Removal and installation of the power supply units is performed as described in the section „Power Supply Units" on page 02-BX600-128.

Replace a defective power supply unit as soon as possible to restore redundancy, avoid airflow disruption, satisfy cooling requirements, and comply with applicable EMC regulations.

The installation bay should not be vacant for more than five minutes while the server is on. Exceeding the five-minute limit may cause damage to certain components.



Installing the System in the Rack

- For safety reasons, at least two people are required to install the server because of its weight and size.
- Before lifting the server into the rack, remove server blades, fan units and power supplies from the system unit to reduce weight.
- To lift the server, use the handles on the front and the fold-out handles on the long sides of the chassis.
- Never lift or transport the server using the handles on the rear.
- The rack may tip over if more than one unit is removed at the same time.

Requirements of the rack

The rack systems from Fujitsu Siemens Computers GmbH (PRIMECENTER rack; DataCenter rack) fully support the installation of the PRIMERGY server systems. Installation in the common rack systems of other manufacturers (**3rd-party rack**) is supported to a large degree.

To accommodate the ventilation concept and ensure proper ventilation of the components in the rack, any unused areas must be closed using dummy covers.

The power is supplied via the socket strips available in the rack.

The main features of the rack systems from Fujitsu Siemens Computers GmbH are:

PRIMECENTER/DataCenter rack

– Frontally bolted rails.
  The rails have a linear alignment option to also allow adjustment to different rack depths.

– Extended cable management within the lateral rack area.

The following applies to rack systems from third-party manufacturers:

3rd-party rack

Certain framework conditions must be fulfilled:

– Installation dimensions (see the dimensions shown in figure on next page).

1	Rack front
2	Rack rear
A	Rack depth (comparison PRIMECENTER rack 940/1000 mm)
B	Rack width (comparison PRIMECENTER rack 700 mm)
C	Clearance of the 19-inch installation level
C1	Front 19-inch installation level
C2	Rear 19-inch installation level
D	Area for cable routing (cable area depth) and ventilation
E	Area for front panel and ventilation
F	Right and left area for support systems
P	PRIMERGY installation depth
a1	Front left support upright
a2	Front right support upright
b1	Rear left support upright
b2	Rear right support upright

– Please ensure that the security mechanism (e.g. stopper or retention system) on the server is working.

– The rack support uprights must allow the rails to be screwed on at the front.

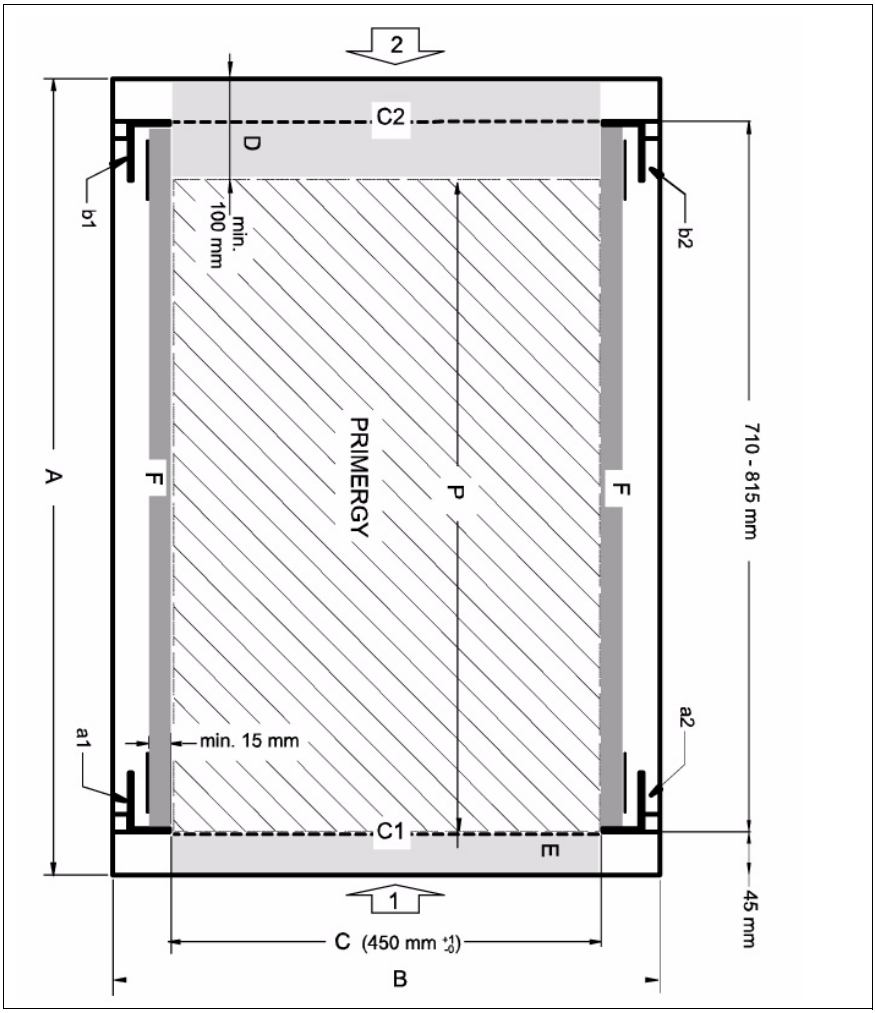
– Frontally bolted rails.
The rails have with a linear alignment option to also allow adjustment to different rack depths.

– No support for the cable management delivered with the mounting kit. This cable management is customized for the Fujitsu Siemens Computers PRIMECENTER rack.

– Climatic conditions.
For the ventilation of the installed server, there must be sufficiently large gaps for air intake at the front of the rack and air discharge at the back of the rack.

In principle the ventilation concept allows for the necessary cooling through horizontal self-ventilation of the installed devices (air flow from the front to the rear).

– Power supply.
For installation in 3rd-party racks, you must ensure that appropriate socket strips are present.



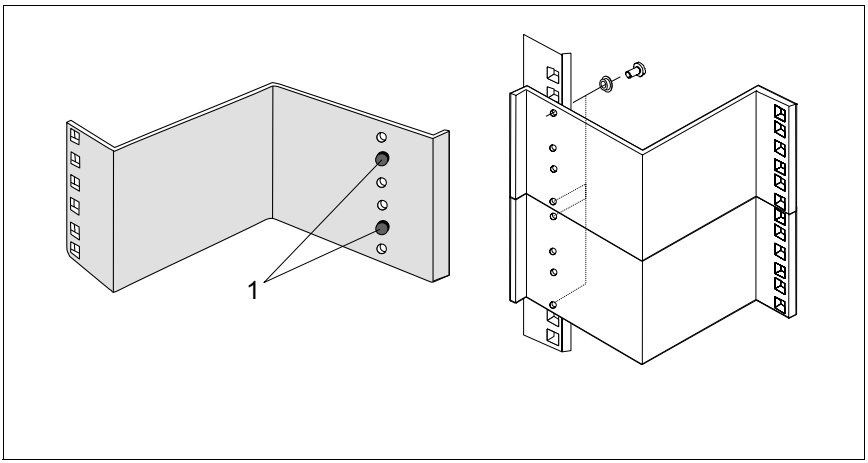
Mounting the Assembly Kit

Mounting the server in the PRIMECENTER/DataCenter rack requires the following parts:
– 2 support brackets
– 2 carrier rails (assembled)
– 12 plug washers and screws

For general information see the technical manual for the relevant rack.

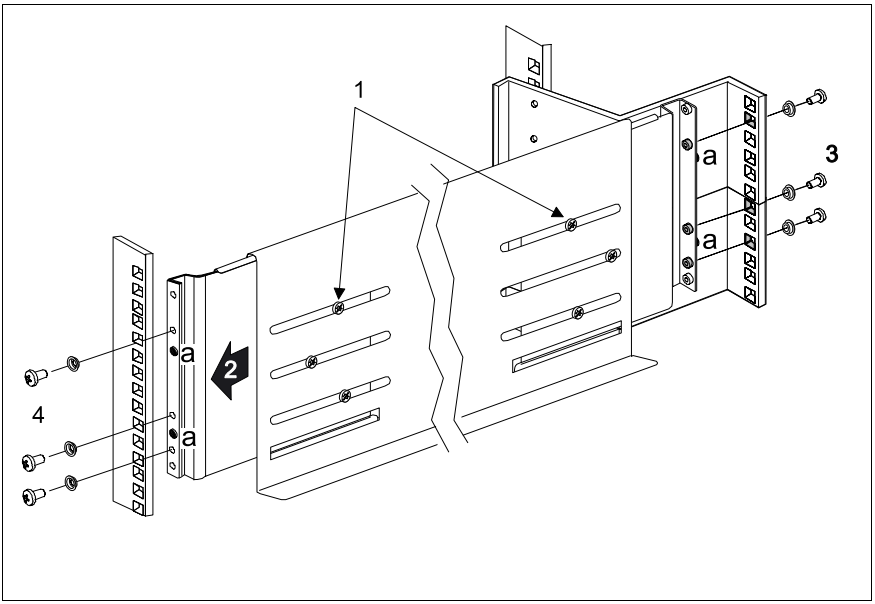
To mount the system in the rack, you must first mount two support brackets on the rear left support upright of the rack. The first one must be mounted level with the lower edge of the device, while the second must be mounted level with the upper edge of the first. The brackets are used for the rear fixing of the left carrier rail.

- See the installation instructions in the technical manual for the relevant rack model.
- Mark the position of the lower edge of the system on the support uprights.



- Place the first support bracket at the appropriate height (level with the lower edge of the device) on the left rear support upright by inserting the positioning nubs (1 in the figure above) in the corresponding holes of the support upright.
- Place the plug washers in the holes of the support uprights and secure the bracket with two screws.

► Repeat the procedure with the second support bracket.
Note that the second bracket will be mounted level with the upper edge of the first support bracket mounted.



► Undo the six screws (1) for adjusting the rail length and place the guide lugs (a) in the corresponding holes of the support brackets.

► Place three plug washers (3) in the appropriate holes of the support brackets and, while holding the rail in place, fasten it with three screws.

► Place two plug washers in the holes of the front left support upright at the marked attachment points, adjust the rail length (2) and, while holding the rail in place, fasten it with three screws (4).

► Push the rail as far as possible in the direction of the arrow (2).

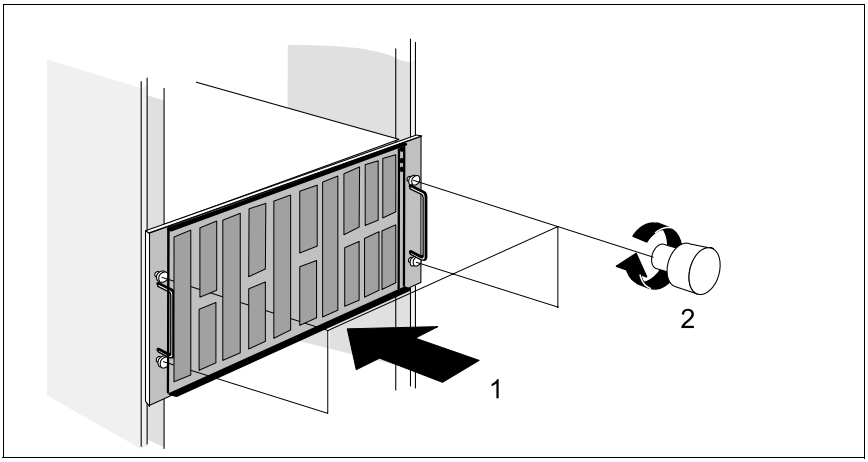
► Fasten the six screws for adjusting the rail length (1).

► Repeat the procedure for the second rail. Note that for this rail no support bracket is necessary.

Mounting/Removing the System

For safety reasons, at least two people are required to mount or remove the server because of its weight and size.

Before lifting the server into the rack, remove server blades, fan units and power supplies from the system unit to reduce weight.



- Notice the slot assignment of the server blades for inserting them again after lifting the server chassis into the rack.
- Remove server blades, fan units and power supplies from the system unit to reduce weight (for assembly instructions see page 02-BX600-73, page 02-BX600-128 and page 02-BX600-141).
- Lift the system onto the two carrier rails.
- Slide the system into the rack (1).
- Secure the system in the rack using the four knurled screws (2).
- Insert the server blades into their slots (see page 02-BX600-73). Mount the power supply units and the fan units into the server chassis again (for assembly instructions see page 02-BX600-73, page 02-BX600-128 and page 02-BX600-141).

You remove the system in reverse order:

Please note the relevant safety instructions (see page 02-BX600-145).

- Notice the slot assignment of the server blades for inserting them again after removing the server chassis from the rack.
- Remove server blades, fan units and power supplies from the system unit to reduce weight.
- Remove the four knurled screws.
- Pull out the system and **carefully** remove it from the rack.

Overviews, lists

Spare parts

The current spare parts list can be found on page 02-BX600-61 or at the following address: http://service.fujitsu-siemens.com/support/spareparts

Glossary

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.

AC'97	Audio Codec '97
ACPI	Advanced Configuration and Power Interface
AGP	Accelerated Graphics Port
AIMM	AGP Inline Memory Module
AMR	Audio Modem Riser
AOL	Alert On LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
BMC	Baseboard Management Controller
CAN	Controller Area Network
CLI	Command Line Interface
CNR	Communication Network Riser
CPU	Central Processing Unit
C-RIMM	Continuity Rambus Inline Memory Module
DIMM	Dual Inline Memory Module
ECC	Error Correcting Code
EEPROM	Electrical Erasable Programmable Read Only Memory
EMC	ElectroMagnetic Compatibility
FDC	Floppy Disk Controller
FIFO	First-In First-Out

FSB	Front Side Bus
FWH	FirmWare Hub
GMCH	Graphics and Memory Controller Hub
I^2C	Inter Integrated Circuit
IAPC	Instantly Available Power Managed Desktop PC Design
ICH	I/O Controller Hub
IDE	Intelligent Drive Electronics
IPSEC	Internet Protocol Security
ISA	Industrial Standard Architecture
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
P64H	PCI64 Hub
PCI	Peripheral Component Interconnect
PSU	Power Supply Unit
PXE	Preboot eXecution Environment
RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analog Converter
RDRAM	Rambus Dynamic Random Access Memory
RI	Ring Indicator
RIMM	Rambus Inline Memory Module
RTC	Real-Time Clock
SB	SoundBlaster
SDRAM	Synchronous Dynamic Random Access Memory
SGRAM	Synchronous Graphic Random Access Memory
SIMD	**S**ingle **I**nstruction **M**ultiple **D**ata (streaming mode instruction)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Universal Serial Bus
VGA	Video Graphics Adapter
WOL	Wake On LAN

Index

A
application areas 02-BX600-6
ASR&R 02-BX600-7
availability 02-BX600-7

C
carrier rail 02-BX600-149
component
  hot-swappable 02-BX600-7
components
  hardware/software 02-BX600-7
concept 02-BX600-5
connecting devices to the
  server 02-BX600-25
controls and indicators
  server rear 02-BX600-33

D
drive indicators 02-BX600-63

E
Error Correcting Code
  (ECC) 02-BX600-7
exchangeable drives 02-BX600-80

F
FC pass-through
  blade 02-BX600-46, 02-BX600-47
  exchanging 02-BX600-110
  port assignment 02-BX600-49
FC SFP module 02-BX600-48
firmware
  management blade
    02-BX600-118
  server blade 02-BX600-100
  switch blade 02-BX600-108
firmware version 02-BX600-19
front panel controls 02-BX600-29
front panel indicators 02-BX600-29

G
general information 02-BX600-5
glossary 02-BX600-153

H
height units 02-BX600-148

I
indicators and
  connectors 02-BX600-47

M
main memory 02-BX600-81
management blade
  features 02-BX600-9
  installation/removal
    02-BX600-115
  lithium battery 02-BX600-117
  settings 02-BX600-50
midplane board 02-BX600-10

O
operating systems 02-BX600-19
other boards
  features 02-BX600-10

P
PDA 02-BX600-7
power distribution
  board 02-BX600-10
power supply 02-BX600-10
power supply unit
  installation/removal
    02-BX600-128
  indicators 02-BX600-36
processor (CPU) 02-BX600-84
PSU fans
  replacing 02-BX600-144

R
rack installation 02-BX600-145
RAID level 02-BX600-7
RAID levels 02-BX600-77
reliability 02-BX600-7

S
screen resolutions 02-BX600-55
SCSI blade 02-BX600-60
  installation/removal 02-BX600-126
server blade
  dummy modules 02-BX600-71
  features 02-BX600-7
  hard disk subsystem 02-BX600-77
  installation/removal 02-BX600-73
  lithium battery 02-BX600-88
server management 02-BX600-11
ServerBooks 02-BX600-13
ServerStart 02-BX600-12
  reference installation 02-BX600-39
  server blade setup 02-BX600-39
ServerSupport 02-BX600-13
service and support 02-BX600-13
software version 02-BX600-19
spare parts 02-BX600-153
spare parts and add-on modules 02-BX600-61
switch blade
  dummy modules 02-BX600-104
  features 02-BX600-9
  installation/removal 02-BX600-106
  settings 02-BX600-43
switching the server on and off 02-BX600-37
switch-OFF time 02-BX600-38
switch-ON time 02-BX600-38
system fans
  fan unit 02-BX600-141

T
technical data 02-BX600-20
temperature/system monitoring 02-BX600-54
troubleshooting 02-BX600-65
type label 02-BX600-19

V
ventilation 02-BX600-11

Updates

This chapter only describes updates and new components. You will find the unmodified components in the leading server item.

Update revision 08.2004

The server blades that can be installed in the PRIMERGY BX600 Blade Server are identified as follows:

PRIMERGY BX600 2-way server blade
: Identifies the server blade type with two Intel Xeon processors, as described in the preceding server description.
"Server blade" as used in the preceding server description refers to the *PRIMERGY BX600 2-way server blade*.

PRIMERGY BX600 4-way server blade
: Identifies the server blade type with up to four Intel Xeon processors, as described in this update. In the following description, this server blade type is also referred to simply as the *4-way server blade*.

Contents

– Modified features (2-way server blade)
see page 02-BX600-159

– New product designations
see page 02-BX600-160

– Note on connecting the blade server to the mains
see page 02-BX600-161

– Modified troubleshooting and tips
see page 02-BX600-162

– Rules for fitting server blades
see page 02-BX600-163

– 4-way server blade
see page 02-BX600-165

– 4-way server blade: Features
see page 02-BX600-165

– 4-way server blade: Product designations
see page 02-BX600-166

– 4-way server blade: Software support
see page 02-BX600-168

– 4-way server blade: Operating systems
see page 02-BX600-169

– 4-way server blade: Mechanical specifications and weight
see page 02-BX600-169

– 4-way server blade: Control and display elements
see page 02-BX600-170

– 4-way server blade: Spare parts and add-on modules
see page 02-BX600-172

– 4-way server blade: 4-way server blade diagnostics LEDs
see page 02-BX600-173

– Installing and removing a 4-way server blade
see page 02-BX600-174

– Opening a 4-way server blade
see page 02-BX600-175

– 4-way server blade: RAM
see page 02-BX600-177

– 4-way server blade: Installing/removing processors
see page 02-BX600-178

– 4-way server blade: Replacing the lithium battery
see page 02-BX600-179

– 4-way server blade: FC daughter cards
see page 02-BX600-181

– 4-way server blade: Extension board
see page 02-BX600-182

– 4-way server blade: Installing/removing the control panel board
see page 02-BX600-185

– 4-way server blade: Recovering the server blade BIOS
see page 02-BX600-189

Modified features

The name of the server blade covered in the preceding server description has been changed to *2-way server blade*.

2-way server blade

The *2-way server blade* combines the core components of a conventional server in a hot-swappable slide-in module with one or two Intel® Xeon™ processors, one or two SCSI hard disk drives, and up to 12 GB RAM. The 2-way server blade occupies one slot in the blade server chassis. It can be installed in combination with other PRIMERGY BX600 server blade models.

Processors	The 2-way server blade can be fitted with one or two 2.8 GHz to 3.2 GHz Intel Xeon processors with 1 MB third-level cache.
RAM	The 2-way server blade has three memory banks. These can be fitted with 512 MB, 1 GB, 2 GB or 4 GB memory, each consisting of two DDR-SDRAM modules. This allows a maximum memory configuration of 12 GB. ECC with memory scrubbing and a hot-spare memory bank are standard.
External connectors	Special connector for 2xUSB and VGA ports
LAN availability	The 2-way server blade offers two 1-gigabit LAN channels. Usually two channels are connected to the switch blades. Each switch blade has ten 1-gigabit downlink ports for connection to one of the LAN channels of the server blade and three uplink ports for 10/100/1000 Base TX.
Fibre Channel	The 2-way server blade can be fitted with up to two 2Gbit/sec Fibre Channel I/O ports. This requires that an FC daughter card be installed in the server blade. To enable use of the Fibre Channel functionality, at least one FC pass-through blade must be installed in the system.
PCI expansion module	The 2-way server blade can be fitted with a PCI expansion module for installing a full-height, half-length PCI card. The PCI expansion module occupies the slot for the second internal SCSI hard disk module.
Graphics controller	ATI Rage XL 8MB onboard graphics controller

Storage capacity	The 2-way server blade can be fitted with up to two 3.5“ SCA2 SCSI hard disk drives with a capacity of 18, 36, 73 or 146 GB. This allows a maximum hard disk capacity of a server blade of 292 (2x146) GB in a RAID-0 configuration. Generally, however, the two disks are mirrored in a RAID-1 configuration. The 2-way server blade has a two-channel Ultra320 SCSI onboard controller with HostRAID functionality.
Security functions	Basic error recognition and correction in the main memory with ECC (ECC memory modules only). Password for system, setup and keyboard. Write protection for floppy disk drive.
Notification	Notification on system status, selection, hard disk activity, LAN connection status.
BIOS	**Phoenix BIOS**, 4-Mbit boot block flash memory.

New product designations

The following products are not listed in the preceding server description.

Product	**I/O module**
S26361-F3052-E1	Switch blade 10/100/1000TX, Accton/Broadcom L2 switch, 10x downlink + 3x uplink, external 3x RJ45 jack, max. 2x per blade server, one switch blade is part of the base configuration of the BX600 Blade Server.
S26361-F3024-E1	Fibre Channel pass-through blade, 10x connectors for GBIC/SFP modules, max. 2x per blade server. FC pass-through blades are optional. If a server blade is to offer Fibre Channel functionality, it must have at least one FC pass-through blade installed.
S26361-F3024-E1	Fibre Channel GBIC/SFP module. 2Gbit with up to 300 m distance, 1 Gbit with up to 500 m distance; max 10 SFP modules per FC pass-through blade.

Note on connecting the blade server to the mains

Load management

Depending on the voltage range, you must observe the restrictions described below on the type of power supply unit (850 W or 1200 W) and the number of concurrently available power supply units (one or two).

The maximum active power of the different PSU types for the available voltage range is shown in the following table (see also page 02-BX600-20):

Voltage range	PSU type	Max. active power
100 - 127 V	1200 W	850 W
200 -240 V	1200 W	1200 W

Load management restrictions

When the blade server is switched on, the management blade checks the power supply situation. As there is no detailed information available on the power supply requirements of the individual server blades at this point, the management blade assumes the maximum value for each server blade.

Therefore it may be possible to switch on an additional server blade later. If, for example, none of the installed server blades has a storage extension, there may be sufficient resources available to power another server blade.

The following table shows that, depending on the installed power supply units and the type of server blade, the maximum number of server blades is restricted.

Type of server blades	2 x 1200 W	3 x 1200 W
2-way server blade	5	10
4-way server blade	2	5
Mixed configuration	Rule:1 x 4-way server blade □ 2 x 2-way server blades	

In the event of a power supply overload or failure, the server blade in the slot with the highest number is shut down gracefully.

Modified troubleshooting and tips

System will not boot after installing a new hard disk drive

- Incorrect SCSI configuration (onboard SCSI HostRAID controller)
  - ► In the SCSI configuration menu, check the settings for the hard disk drives (SCSI Device Configuration) and the settings under Advanced Configuration Options.

Drives are reported as "dead" at system boot

- Configuration of the RAID controllers is wrong
  - ► Check and correct the settings for the drives with the RAID controller utility.

Further information can be found in the operating manual for the RAID controller (for more information on the HostRAID functionality of the onboard SCSI controller, see the ServerBooks CD under "Controllers").

Added drive is reported defective

- RAID controller is not configured for the drive
  The drive was probably installed with the system switched off.
  - ► Reconfigure the RAID controller for the hard disk drive using the RAID controller utility. Further information can be found in the operating manual for the RAID controller (for more information on the HostRAID functionality of the onboard SCSI controller, see the ServerBooks CD under "Controllers").

  or

  - ► Re-install the drive while the system is switched on.

    If the hard disk drive is still reported defective, then replace it.

Rules for fitting server blades

The PRIMERGY BX600 Blade Server offers ten slots for server blades on the front (numbered 1 - 10 from left to right).

The order in which the server blade slots must be fitted depends on whether 2-way server blades, *4-way server blades* or a mixture of both are being installed, and on the configuration of the server blades.

Configuration with 2-way server blades

– Slot 4 is filled first.

– Then slots 5 to 10 are filled in numerical order, then slots 1 to 3.

– 2-way server blades with a SCSI controller in a PCI expansion module must only be installed in slots 5 and 6 in the rack due to the SCSI connection cable (see page 02-BX600-97).

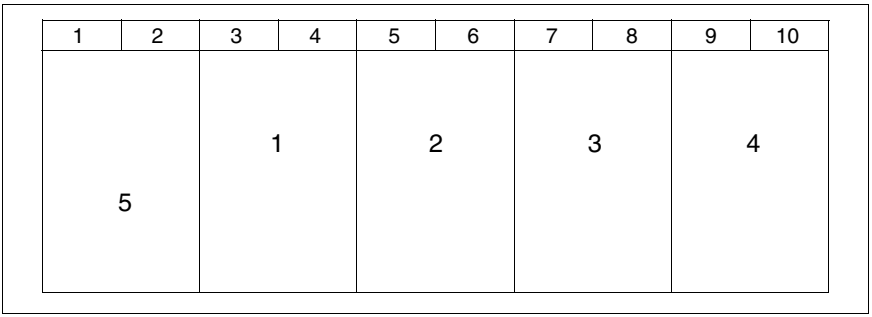
1	2	3	4	5	6	7	8	9	10
8	9	10	1	2	3	4	5	6	7

Installation sequence with 2-way server blades

Configuration with 4-way server blades

– Slots 3 and 4 must be filled first.

– Then slots 5 to 10 are filled in pairs, followed by slots 1 and 2, in numerical order.

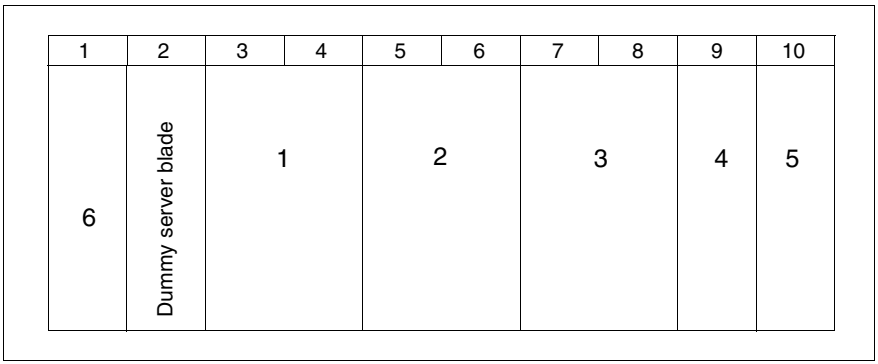


Installation sequence with 4-way server blades

Configuration with a mix of 2-way and 4-way server blades

– The *4-way server blades* must be installed first, then the 2-way server blades.

– The first 4-way server blade is installed in slots 3 and 4.



Installation sequence with three 2-way and three 4-way server blades

2-way server blades with a SCSI controller must be installed in slots 5 and 6 only. If only one 2-way server blade with a SCSI controller is being installed, it should go in slot 5, and slot 6 should be fitted with a dummy blade.

4-way server blade

The following section describes the components and the installation and removal of a *PRIMERGY BX600 4-way server blade*.

4-way server blade: Features

The *4-way server blade* combines the core components of a conventional server in a hot-swappable slide-in module with two to four Intel® Xeon™ processors, one or two SCSI hard disk drives, and up to 16 GB RAM. The *4-way server blade* occupies two slots in the blade server chassis. It can be installed in combination with other PRIMERGY BX600 server blade models.

Processors	The *4-way server blade* offers four processor sockets. The base configuration contains two processors. Processors 3 and 4 can be added later. A *4-way server blade* can accommodate Intel® XEON® MP processors with 2.2 GHz, 2.7 GHz or 3.0 GHz. The 2.2 GHz CPU offers 2 MB third-level cache, the 2.7 GHz and 3.0 GHz CPUs each offer 4 MB third-level cache. ⚠ It is not possible to use CPUs with different clock rates or cache capacity in the same *4-way server blade*.
RAM	A *4-way server blade* offers four memory banks with two 184-pin DDR slots each. One memory bank can accommodate two DDR SDRAM modules with 1 GB, 2 GB or 4 GB combined memory. This allows a maximum memory configuration of 16 GB. ECC with memory scrubbing and a hot-spare memory bank are standard.
External connectors	Special connector for 2xUSB and VGA ports.
LAN availability	The *4-way server blade* offers 2x2 1-gigabit LAN channels which are connected to the LAN via the *switch blades* of the blade server.
Fibre Channel	If two FC daughter cards are installed, the *4-way server blade* can be equipped with up to four 2 Gbit/sec Fibre Channel I/O ports. To enable use of the Fibre Channel functionality, at least one *FC pass-through blade* must be installed in the blade server.
Graphics controller	ATI Rage XL 8MB onboard graphics controller

Storage capacity	The *4-way server blade* can be fitted with up to two 3.5“ SCA2 SCSI hard disk drives with a capacity of 18, 36, 73 or 146 GB. This allows a maximum hard disk capacity of a server blade of 292 (2x146) GB in a RAID-0 configuration. Generally, however, the two disks are mirrored in a RAID-1 configuration. The *4-way server blade* has a two-channel Ultra320 SCSI onboard controller with HostRAID functionality.
Security functions	Basic error recognition and correction in the main memory with ECC (ECC memory modules only). Password for system, setup and keyboard. Write protection for floppy disk drive.
Notification	Notification on system status, selection, hard disk activity, LAN connection status.
BIOS	Phoenix BIOS, 8-Mbit boot block flash memory.

4-way server blade: Product designations

Product	**Basic units: 4-way server blades**
	Features: – Support for 4 Xeon processors – 8 memory slots (to be fitted in pairs), divided into 4 memory banks for a maximum of 16 GB DDR SDRAM – 4x onboard LAN 10/100/1000TX (compatible with Broadcom 5703) – Two onboard SCSI HostRAID controllers (Adaptec 7902W) – Slots for two optional FC I/O modules (FC daughter cards). Fibre Channel functionality requires at least one Fibre Channel pass-through blade on the rear of the blade server. – 2 slots for 3.5" SCSI hard disk modules (hot-plug) – ATI Rage XL 8MB onboard graphics controller – Special connection (Y cable) with 2x USB and 1x VGA port.
S26361-K921-V411	*4-way server blade:* 2 CPU, Xeon MP 2.2 GHz / 2 MB TLC (third-level cache), 1 GB SDRAM
S26361-K921-V421	*4-way server blade:* 2 CPU, Xeon MP 2.2 GHz / 2 MB TLC, 2 GB SDRAM
S26361-K921-V431	*4-way server blade:* 2 CPU, Xeon MP 2.2 GHz / 2 MB TLC, 4 GB SDRAM
S26361-K921-V412	*4-way server blade:* 2 CPU, Xeon MP 2.7 GHz / 2 MB TLC, 1 GB SDRAM
S26361-K921-V422	*4-way server blade:* 2 CPU, Xeon MP 2.7 GHz / 2 MB TLC, 2 GB SDRAM

S26361-K921-V432	*4-way server blade:* 2 CPU, Xeon MP 2.7 GHz / 2 MB TLC, 4 GB SDRAM
S26361-K921-V413	*4-way server blade:* 2 CPU, Xeon MP 3.0 GHz / 4 MB TLC, 1 GB SDRAM
S26361-K921-V423	*4-way server blade:* 2 CPU, Xeon MP 3.0 GHz / 4 MB TLC, 2 GB SDRAM
S26361-K921-V433	*4-way server blade:* 2 CPU, Xeon MP 3.0 GHz / 4 MB TLC, 4 GB SDRAM
S26361-K863-B8	Rack mounting kit for all 19-inch PRIMERGY racks including: – Carrier rails – Mounting aid for the DataCenter rack
S26361-F2749-E1	"Works installation": Service for mounting the server blade in the system unit. The BX600 Blade Server is delivered complete with installed and tested server blades. Min. 1x per system unit, max. 10x per system unit, max 1x per server blade.
S26361-F2749-E2	Server blade packed/delivered individually, not installed in the BX600 blade server but tested and delivered separately. Max. 1x per server blade.

Product	**Processor**
	Four processor sockets are available. Two sockets are occupied in the base configuration. The sockets can be fitted with Intel Xeon (DP) processors. The third and fourth processors can also be installed later. The two processors must have the same clock rate and cache size. The 4-way processor system requires a multi-processor-capable operating system.
S26361-F2549-E401	Xeon MP 2.2 GHz, 2 MB TLC, heat sink for 3rd and 4th processor
S26361-F2549-E402	Xeon MP 2.7 GHz, 2 MB TLC, heat sink for 3rd and 4th processor
S26361-F2549-E403	Xeon MP 3.0 GHz, 4 MB TLC, heat sink for 3rd and 4th processor

Product	RAM
	– A *server blade* offers four memory banks for memory modules (8 slots, to be fitted in pairs). – These memory banks can be fitted with 1GB, 2GB and 4GB DDR SDRAM modules. – This allows a maximum memory configuration of 16GB. i ECC with memory scrubbing, chipkill and a hot-spare memory bank are standard with PRIMERGY BX600 4-way server blades.
S26361-F2762-E524	1 GB RAM, PC2100 registered DDR RAM with chipkill support, consisting of 2 modules, occupies one memory bank, max. 4 per server blade
S26361-F2762-E525	2 GB RAM, PC2100 registered DDR RAM with chipkill support, consisting of 2 modules, occupies one memory bank, max. 4 per server blade
S26361-F2762-E526	4 GB RAM, PC2100 registered DDR RAM with chipkill support, consisting of 2 modules, occupies one memory bank, max. 4 per server blade

Product	Attachable drives / external devices
	The following devices can be attached to a *server blade* using a breakout cable.
S26361-F2609-L620	USB cable for CD-ROM drive
S26361-F2609-L420	Traveler CD-ROM drive

4-way server blade: Software support

The *PRIMERGY BX600 4-way server blade* supports the following software and firmware versions (and later):

ServerView	Version 3.0
RemoteView	Version 3.0
ServerStart	Version 5.408
ServerBooks	Version 5.408
ServerSupport	Version 4.27 / 5.208

4-way server blade: Operating systems

Manufacturer	Operating system
Microsoft	Windows 2000 Server
	Windows 2000 Advanced Server
	Windows 2003 Server Standard Edition
RedHat	Linux 9 (no) Linux AS 2.1
SuSE	Linux 9 Linux ES 8

4-way server blade: Mechanical specifications and weight

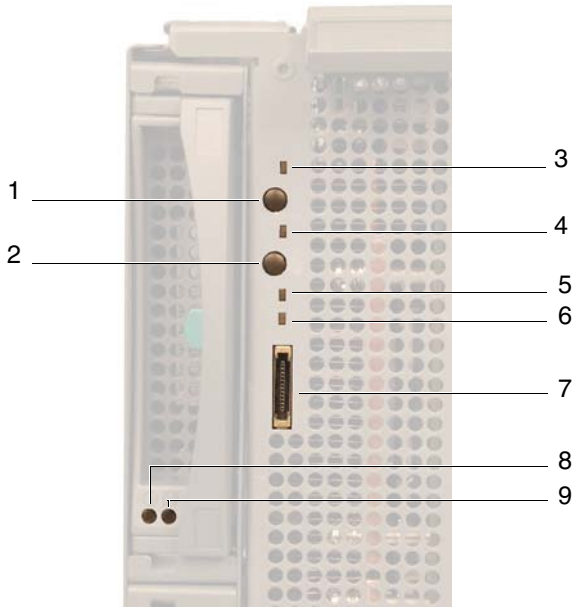
Mechanical specifications

Width	286 mm
Installation depth	470 mm (520 mm incl. levers and plugs)
Height	86 mm (2 slots in blade server)

Weight

Max. 12 kg (configuration-dependent)

4-way server blade: Control and display elements



1	**On/Off button** fully compatible with the Advanced Configuration Power Interface (ACPI). If you press the On/Off button when the server blade is off, the *power_up* command is sent to the management blade and the server blade is switched on. If you press the On/Off button for less than 4 seconds when the blade server and server blade are running, the server blade is switched off and the *power_off* notification command is sent to the management blade (*graceful shutdown*). If you press the On/Off button for more than 4 seconds when the server blade is running, the server blade is switched off immediately.
2	**KVM button (keyboard/video/mouse)** Pressing this button switches the keyboard, monitor and mouse to this server blade.

3	**Voltage/Selection indicator (two-color LED)**	
	Dark:	The blade server is off (5 V standby voltage is not present), or the server blade is not installed properly.
	Glows green:	Server blade is running.
	Glows orange:	Server blade is off but blade server is running (5 V standby voltage is present).
	Flashes green:	Server blade is switched on and selected for identification, or this server blade is in a critical state.
	Flashes orange:	Server blade is switched off and selected for identification, or this server blade is in a critical state.
	Flashes green-orange	Server blade is in standby mode (ACPI function) or in a critical state.
	Flashes green-dark-orange	Server blade is in standby mode (ACPI function) and selected for identification, or this server blade is in a critical state.
4	**KVM/MP error indicator (two-color LED)**	
	Dark:	KVM has not been activated for this server blade.
	Glows green:	KVM has been activated for this server blade.
	Flashes orange:	KVM has not been activated for this server blade, and this blade has been deactivated to save energy.
	Flashes green-orange:	KVM has been activated for this server blade, and this blade has been deactivated to save energy.
5	**Fibre Channel I/O status (green LED)**	
	Dark:	System is off or signal synchronization has failed.
	Green:	System is switched on and online.
6	**NIC indicator (green LED)**	
	Dark:	System or server blade is off, and LAN interface is not active.
	Glows green:	Existing LAN connection.
	Flashes green:	Active LAN.

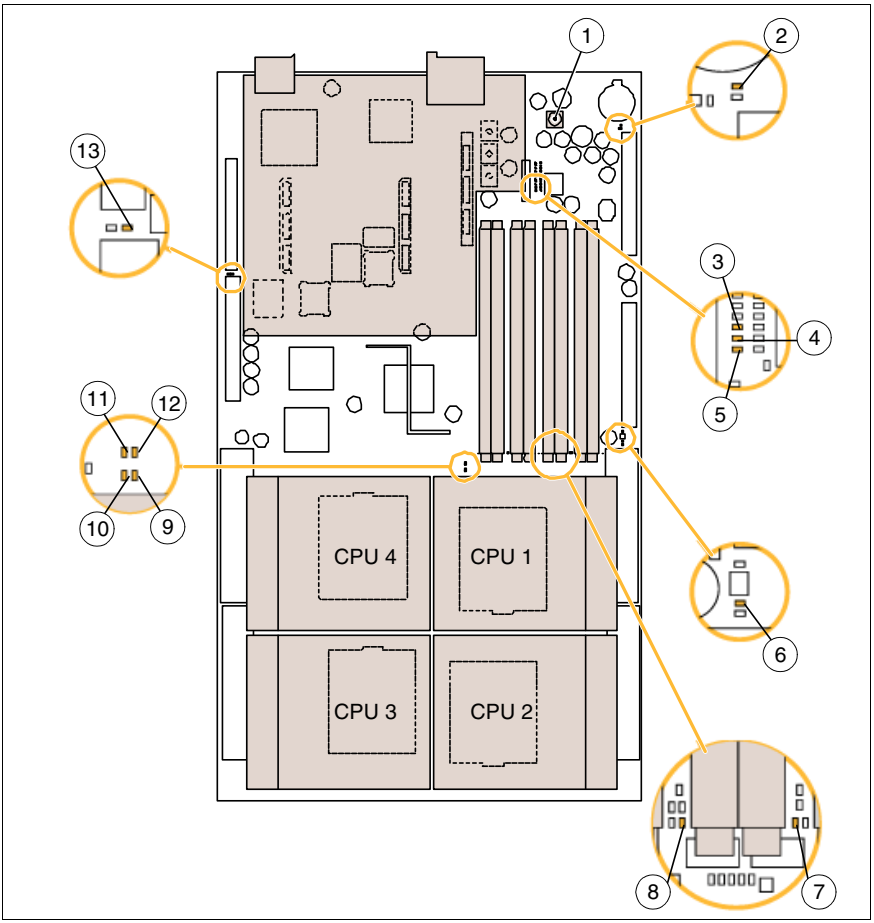
7	**USB/VGA connector** Connector for adapter cable with two USB ports for external CD/floppy disk drives and a VGA port. A special cable is required! (See page 02-BX600-25)
8	**Hard disk access (green LED)** Dark: Hard disk drive not active. Glows green: Hard disk drive active.
9	**Hard disk drive indicator (orange LED)** Glows orange: Server blade is on and hard disk drive has an error.

4-way server blade: Spare parts and add-on modules

The following spare parts and add-on modules are available for the *PRIMERGY BX600 4-way server blade*:

BX600 4-way server blade	A3C40057465
SCSI backplane	A3C40060129
DC/DC converter 12V/Vx.x	A3C40040532
Intel Xeon CPU, 2.2 GHz, 2MB TLC	A3C40056020
Intel Xeon CPU, 2.7 GHz, 2MB TLC	A3C40056021
Intel Xeon CPU, 3.0 GHz, 2MB TLC	A3C40056022
CPU heat sink for CPU 2 and 3 (low version)	A3C40053561
CPU heat sink for CPU 1 and 4 (high version)	A3C40052306
1 GB RAM (2x 512 MB DDR-SDRAM)	S26361-F2762-L524
2 GB RAM (2x 1 GB DDR-SDRAM)	S26361-F2762-L525
4 GB RAM (2x 2 GB DDR-SDRAM)	S26361-F2762-L526
SCSI ribbon cable	A3C40060123
Front panel/PCI assembly kit BX600	A3C40060535
Front panel cable (foil cable)	A3C40060126

4-way server blade: 4-way server blade diagnostics LEDs



1	Diagnostics button	2	VRM 3V3 error
3	Top daughter card error	4	Extension board error
5	Bottom daughter card error	6	VRM 2V5 error
7	DIMM B error	8	DIMM A error
9	CPU 2 error	10	CPU 3 error
11	CPU 4 error	12	CPU 1 error
13	VRM 5V error		

- Press the diagnostics button (1) to locate defective components via their glowing diagnostics LED.

Installing and removing a 4-way server blade

The *4-way server blade* has the same locking mechanism as the 2-way server blade.

Turning the locking handles to the unlocked position (4-way server blade)

Press the touchpoints (1) to unlock the handles so that you can turn them outwards to the unlocked position.

The 4-way server blade is installed and removed in the same way as the 2-way server blade, see page 02-BX600-73.

When installing and removing server blades, please observe the detailed instructions for the installation sequence (see page 02-BX600-163).

Any unused slots in the blade server are fitted with appropriate dummy modules to comply with the electromagnetic compatibility (EMC) regulations and ensure sufficient cooling of the system components.

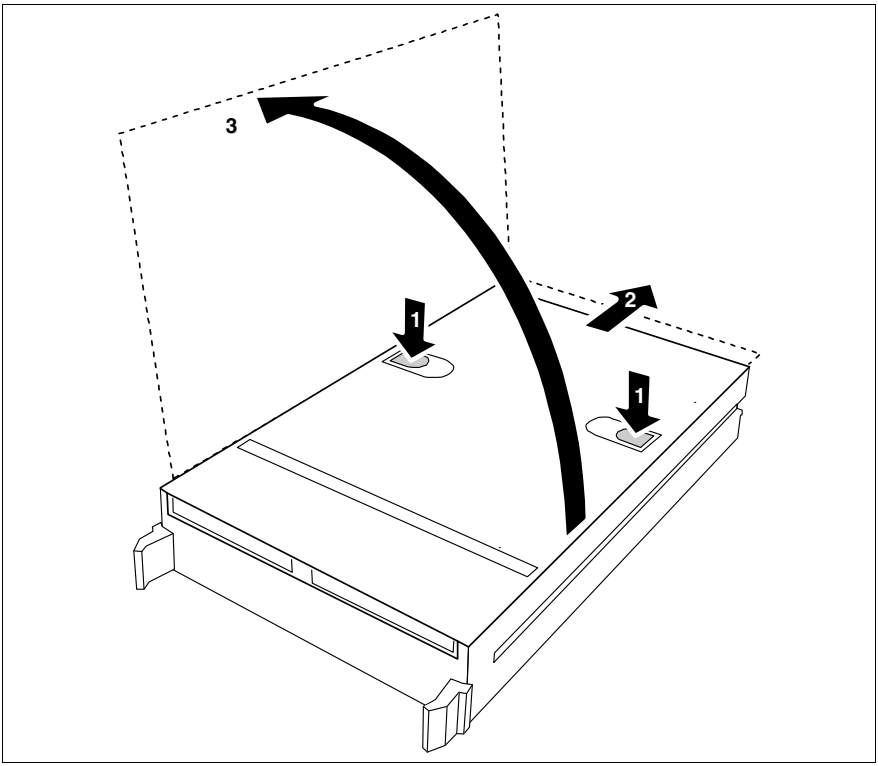
To add a *4-way server blade*, you must first remove two dummy modules from the corresponding slots.

After removing a *4-way server blade* from a blade server, you must install two dummy modules in the empty slots (see page 02-BX600-71).

Opening a 4-way server blade

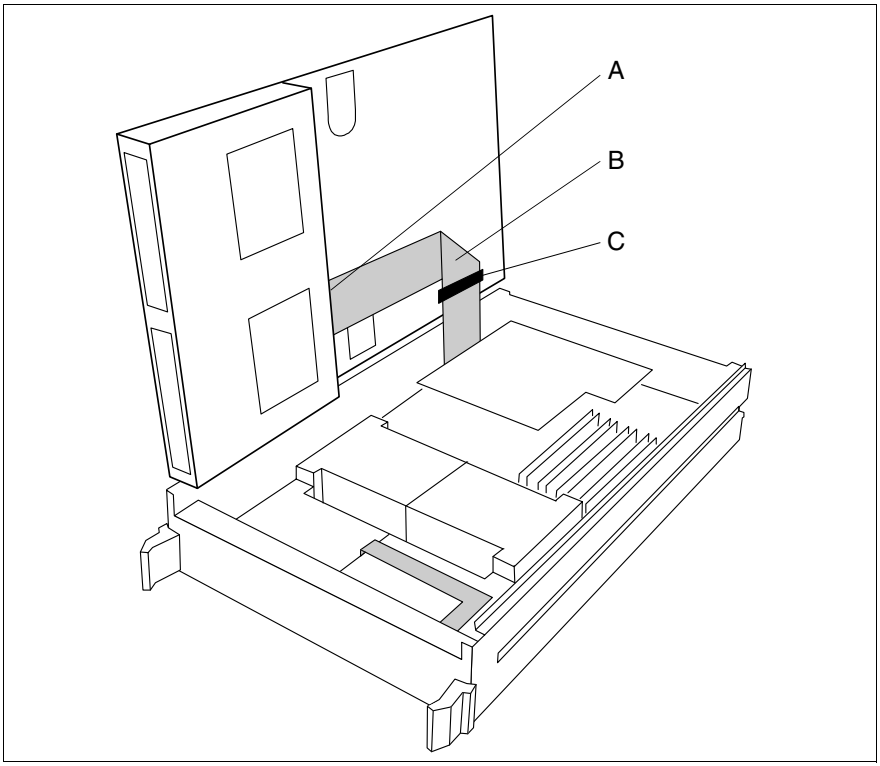
If hard disk modules are installed in the *4-way server blade*, these must be removed before opening the server blade (see page 02-BX600-77).

The *4-way server blade* is extremely sensitive to electrostatic discharge and must therefore be handled with caution. Place the server blade on an insulated, antistatic surface before taking off its cover. Never slide a server blade over a surface.



- Unlock the server blade cover by pressing on the touchpoints (1) and slide back the cover as far as possible (approx. 1.5 cm) in the direction of the arrow (2).
- Fold the cover to the left into the vertical locking position (3).

Do not fold the cover further up than the vertical locking position, as this may damage the mechanical elements of the server blade chassis.



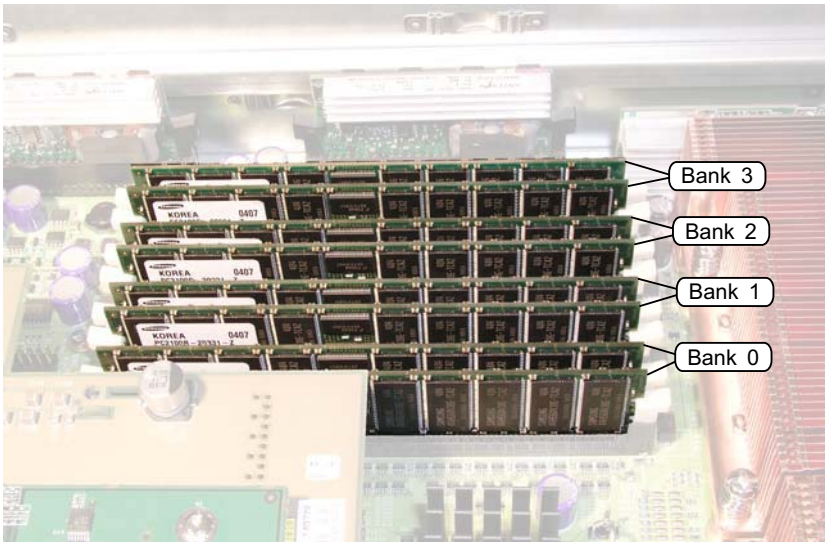
- ► Open the cable guide clip (C) and disconnect the plug of the ribbon cable (B) from the socket on the SCSI backplane (A).
- ► Close the cover of the *4-way server blade* without locking it.
- ► Lift off the cover, holding it horizontally.

To close the *4-way server blade*, follow the above steps in reverse order.

4-way server blade: RAM

The PRIMERGY BX600 *4-way server blade* offers four memory banks with two 184-pin DDR slots each. A memory bank can accommodate two DDR SDRAM modules (PC2100 registered) with 1 GB, 2 GB or 4 GB combined memory. This allows a maximum memory configuration of 16 GB.

One memory bank is occupied in the base configuration.



Make sure you observe the correct sequence when installing memory modules in the banks! The memory banks must be fitted in descending numerical order (3-2-1-0), see figure above. If memory modules of different capacities are used, the modules with the higher capacity must always be installed in slots with the lower slot numbers.

Example: If two 512 MB SDRAM memory modules and two 1 GB SDRAM memory modules (a total of 3 GB RAM) are to be installed in a *4-way server blade*, the 1-GB SDRAM modules must be installed in bank 2 and the 512-MB SDRAM modules in bank 3.

The DDR SDRAM modules are installed and removed in the same way as in the 2-way server blade, see page 02-BX600-81.

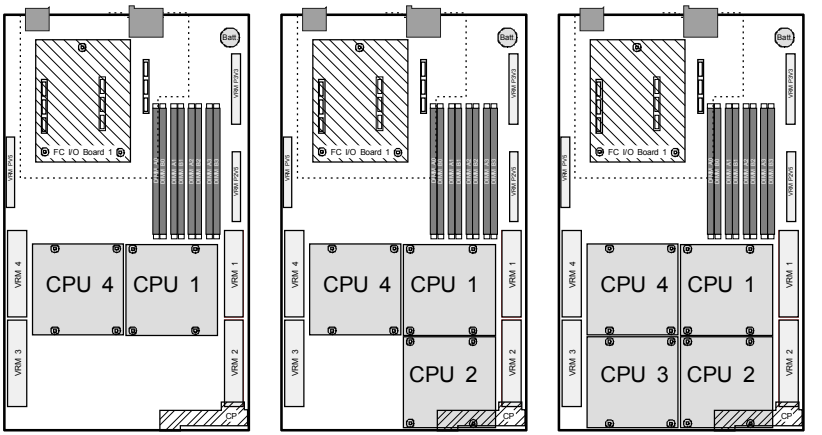
4-way server blade: Installing/removing processors

The *4-way server blades* offers four processor sockets. The base configuration contains two processors. Processors 3 and 4 can be added later. A *4-way server blade* can accommodate Intel® XEON® MP processors with 2.2 GHz, 2.7 GHz or 3.0 GHz.

The 2.2 GHz CPU offers 2 MB third-level cache, while the 2.7 GHz and 3.0 GHz CPUs each offer 4 MB third-level cache.

It is not possible to use CPUs with different clock rates or cache capacity in the same *4-way server blade*.

Make sure you observe the correct sequence when installing CPUs in the *4-way server blade*.



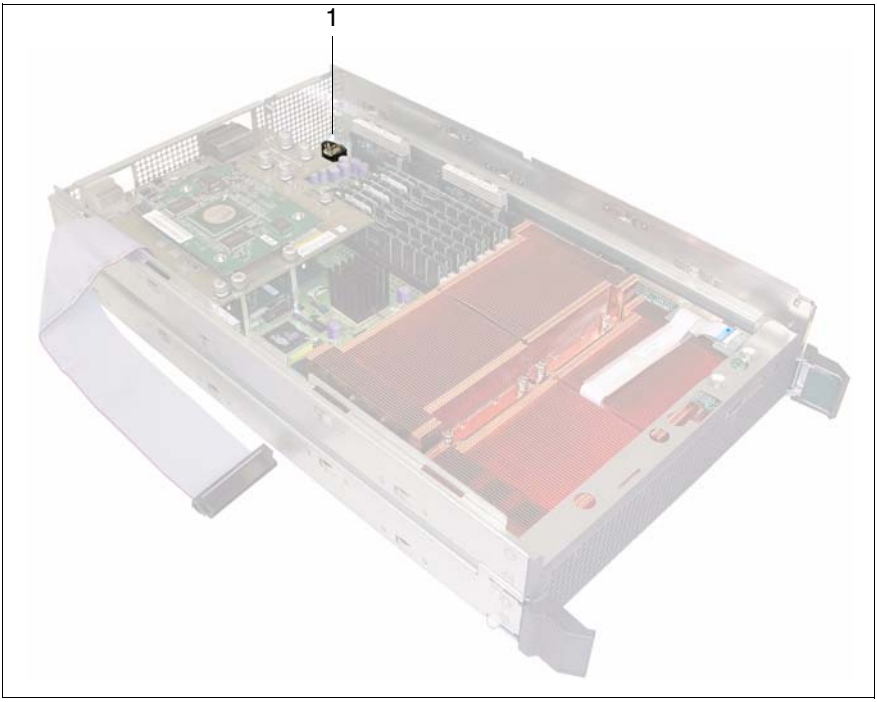
2 processors (base configuration)	3 processors	4 processors

The processors and heat sinks are installed and removed in the same way as in the 2-way server blade, see page 02-BX600-84.

Before installing CPU 3, you must remove the control panel board from its fastening on the front of the server blade chassis (see page 02-BX600-185).

4-way server blade: Replacing the lithium battery

To allow permanent saving of the system information, a lithium battery is installed which supplies the CMOS memory of the *4-way server blade* with power.



Position of the lithium battery (1) in the 4-way server blade

If the battery voltage is too low or the battery is empty, a corresponding error message is displayed. In this case, the lithium battery must be replaced.

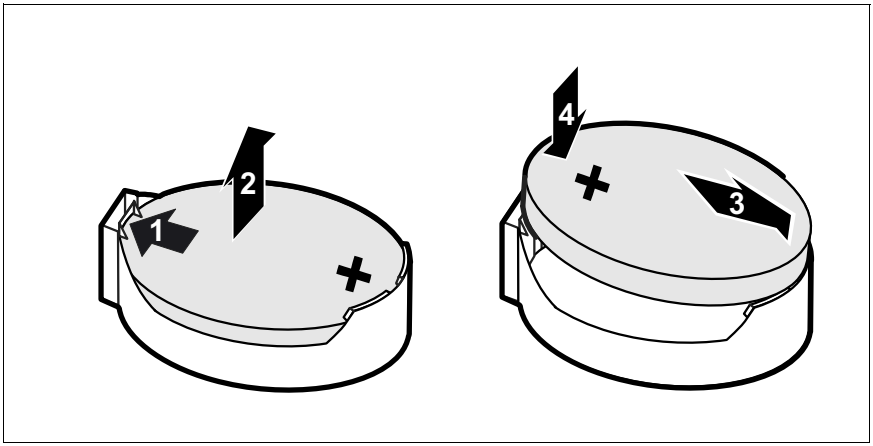
- Incorrect replacement of the lithium battery may cause a risk of explosion. The positive pole must be on top!
- The lithium battery must be replaced with an identical battery or with a battery type recommended by the manufacturer (CR2032).
- Do not throw lithium batteries into the trash can. Please dispose of them in accordance with local regulations.

Requirements

– The *4-way server blade* has been removed (see page 02-BX600-174)

Before handling the components, you must electrostatically discharge yourself (e.g. by touching a grounded object). Always hold electrostatic-sensitive devices by the edges and place them on a pad which is free of electrostatic charge.

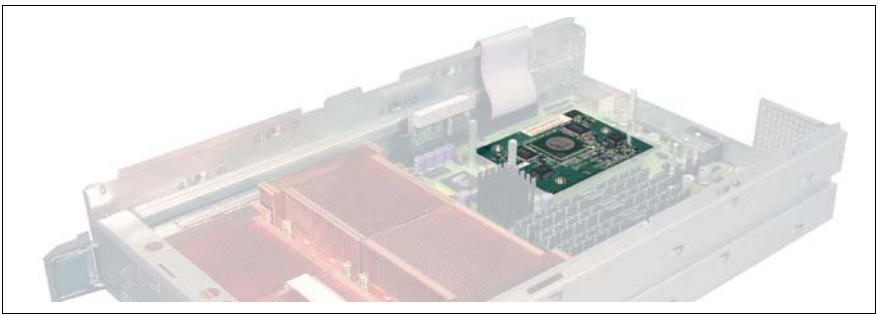
Any devices or tools that are used must be free of electrostatic charge. To ensure this, you should use a suitable wristband or grounding cable that connects you to the external chassis of the system unit.



- ► Press the locking spring in the direction of the arrow (1) so that the lithium battery is released from its carrier, and remove the battery (2).
- ► Place the new battery of the same type in the carrier (3) and press it in the direction of the arrow (4) until it clicks into place.

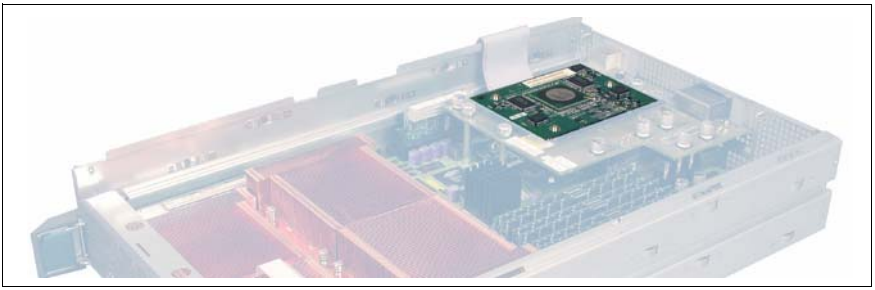
4-way server blade: FC daughter cards

The *4-way server blade* offers two PCI X 64-bit slots for installing FC daughter cards. This allows up to two or four independent serial 2-GB Fibre Channel ports to be provided in a *4-way server blade*. The slots for the first FC daughter card are located on the system board of the *4-way server blade*.



Position of FC daughter card 1 on the system board

The slots for the second FC daughter card are located on the extension board, which is installed as a second level above the slots for the first FC daughter card.



Position of FC daughter card 2 on the extension board

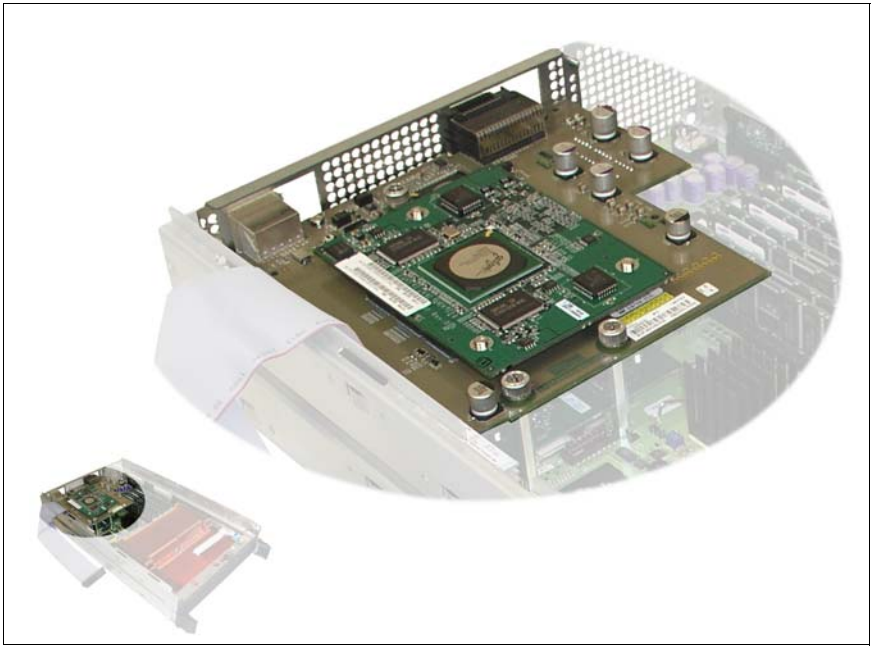
Installing an FC daughter card

FC daughter cards are installed in the *4-way server blade* in the same way as in the *2-way server blade*, see page 02-BX600-98.

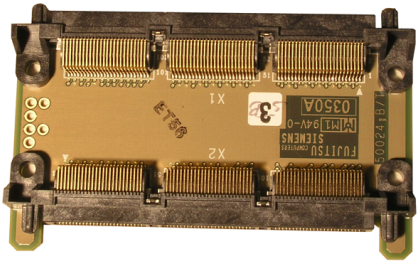
i To install FC daughter card 1 on the system board of the *4-way server blade*, you must first remove the extension board and reinstall it afterwards (see page 02-BX600-182).

4-way server blade: Extension board

The *4-way server blade* has an extension board for additional I/O functionality. The extension board offers slots for installing an FC daughter card (see page 02-BX600-181) and has a connector for the connection to the midplane of the blade server chassis.



The extension board is connected to the system board via a connecting board (IMB riser card).

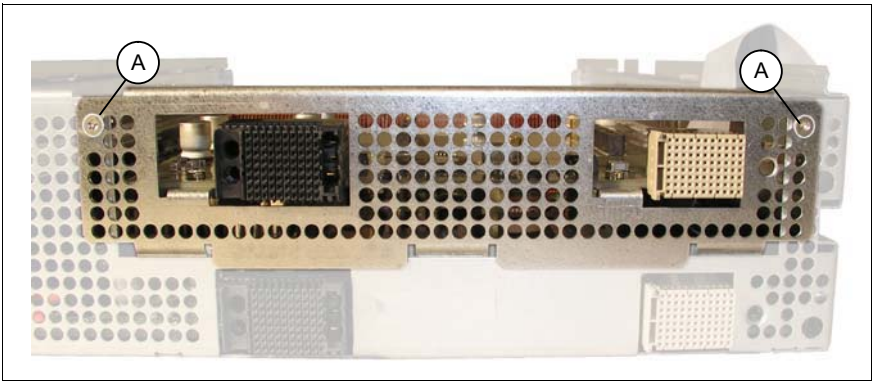


Connecting board between extension board and system board

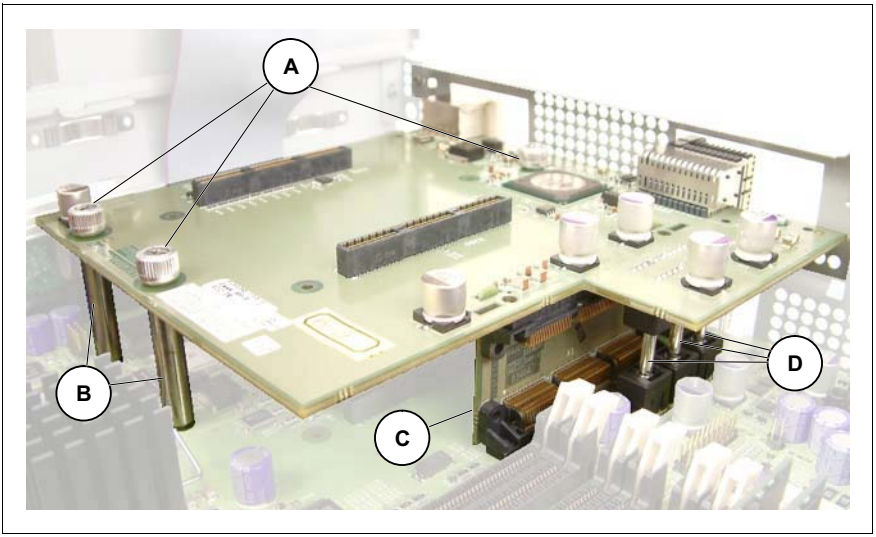
Installing/removing the extension board

Before handling the components, you must electrostatically discharge yourself (e.g. by touching a grounded object). Always hold electrostatic-sensitive devices by the edges and place them on a pad which is free of electrostatic charge.

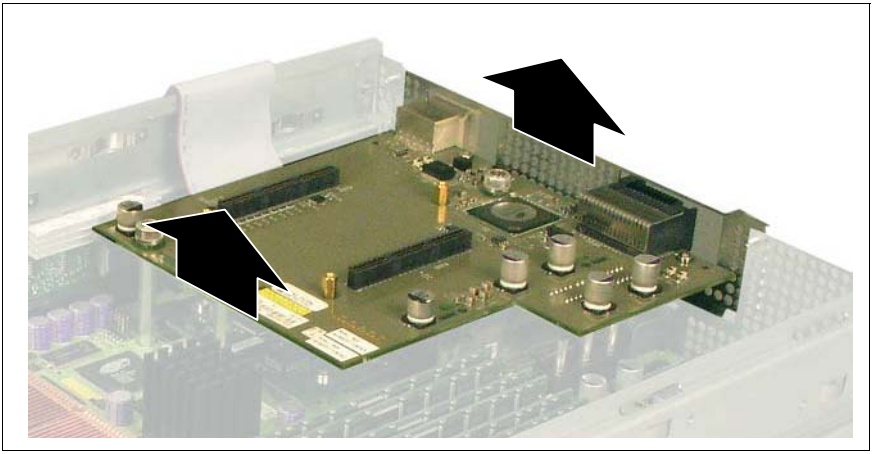
Any devices or tools that are used must be free of electrostatic charge. To ensure this, you should use a suitable wristband or grounding cable that connects you to the external chassis of the system unit.



► Remove the two screws (A) which fasten the extension board to the back of the server blade chassis.



- Undo the three knurled screws (A) which fasten the extension board to the stud nuts (B).
- Rocking it slightly, remove the extension board from the connecting board (C) and the three guide pins (D).

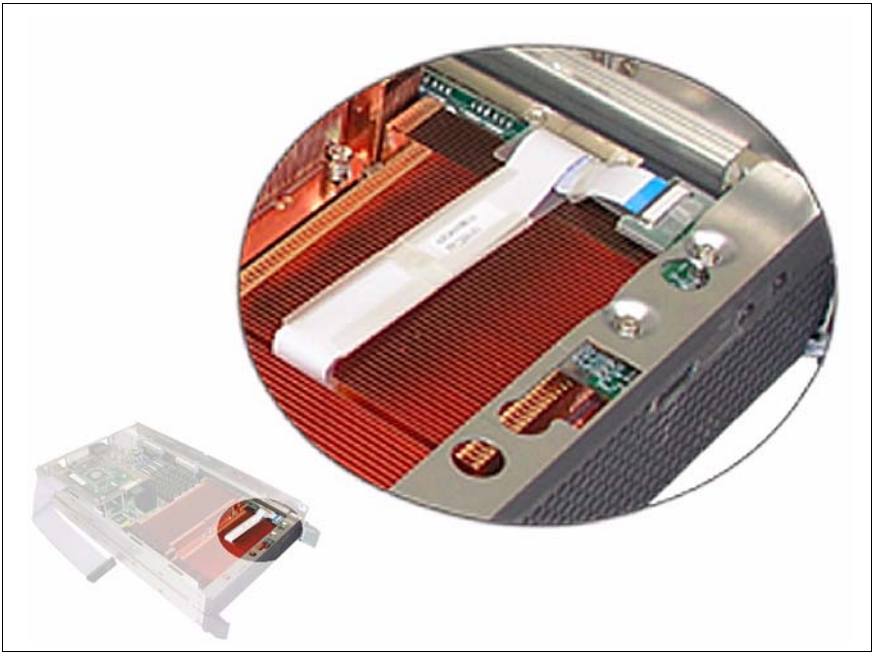


- Lift the extension board out of the server blade chassis holding it horizontally.

To install the extension board, follow the above steps in reverse order.

4-way server blade: Installing/removing the control panel board

The electronic elements of the control and connection panel of the *4-way server blade* are located on a board that is connected to the system board of the server blade via a foil cable. The control panel board is attached to the chassis of the *4-way server blade* above the mounting location for the heat sink of CPU 2.

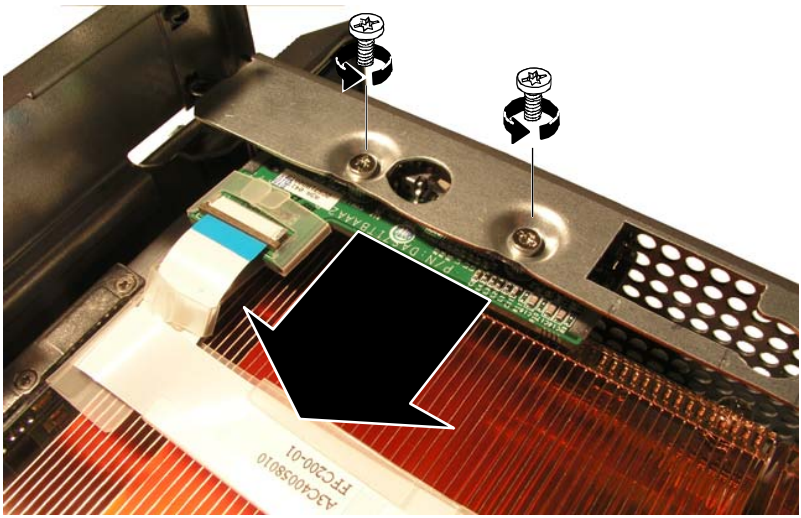


Before installing CPU 2, you must remove the control panel board from its fastening on the front of the 4-way server blade.

Removing the control panel board

Before handling the modules, you must electrostatically discharge yourself (e.g. by touching a grounded object). Always hold electrostatic-sensitive devices by the edges and place them on a pad which is free of electrostatic charge.

Any devices or tools that are used must be free of electrostatic charge. To ensure this, you should use a suitable wristband or grounding cable that connects you to the external chassis of the system unit.



- ► Undo the two Torx screws which fasten the control panel board to the server blade chassis.
- ► Swivel the control panel board with the connection cable out of its mounting position in the direction of the arrow.

i If you want to remove CPU 2, or if you must disconnect the cable of the control panel board from the system board of the 4-way server blade, you can now remover the heat sink for CPU 2.

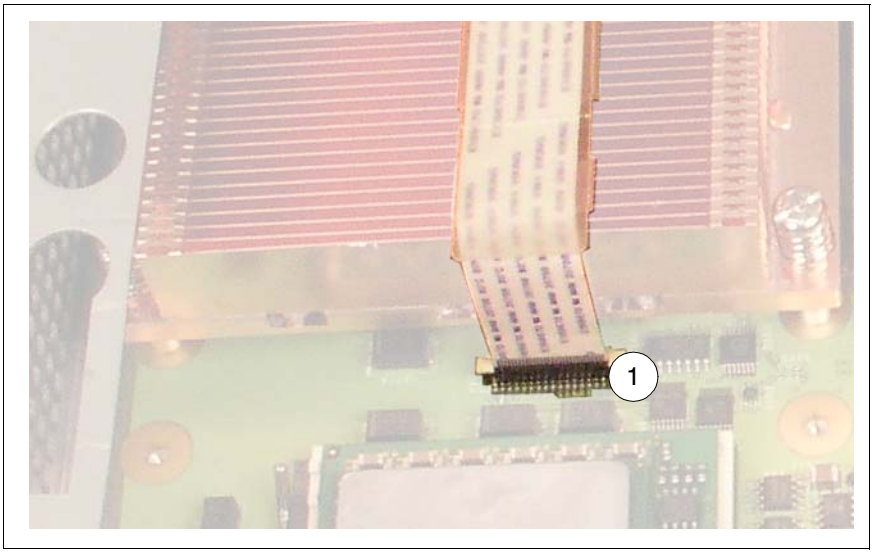
Tip: The heat sink of CPU 2 is easier to remove if you first remove the heat sink of CPU 1.

► Undo the four fastening screws of the heat sink and lift it carefully off the CPU.

When you have removed the heat sink, check that the heat sink compound is intact. If it is not, you must do the following before reinstalling the heat sink:

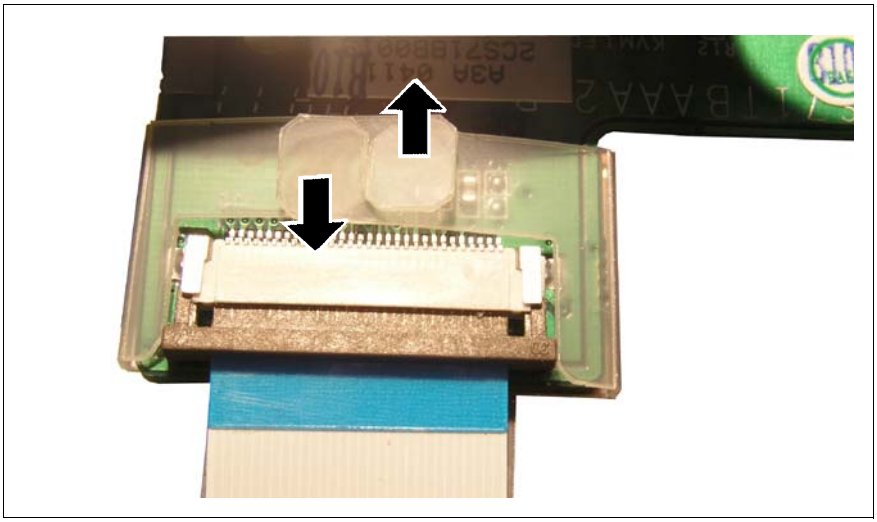
Remove any remnants of the heat sink compound from the bottom of the heat sink and clean the top of the processor. Use a lint-free Isopropyl alcohol wipe (e.g. CleanTex TexPad 801, available from specialist dealers).

Apply a new film of heat sink compound to the bottom of the heat sink.

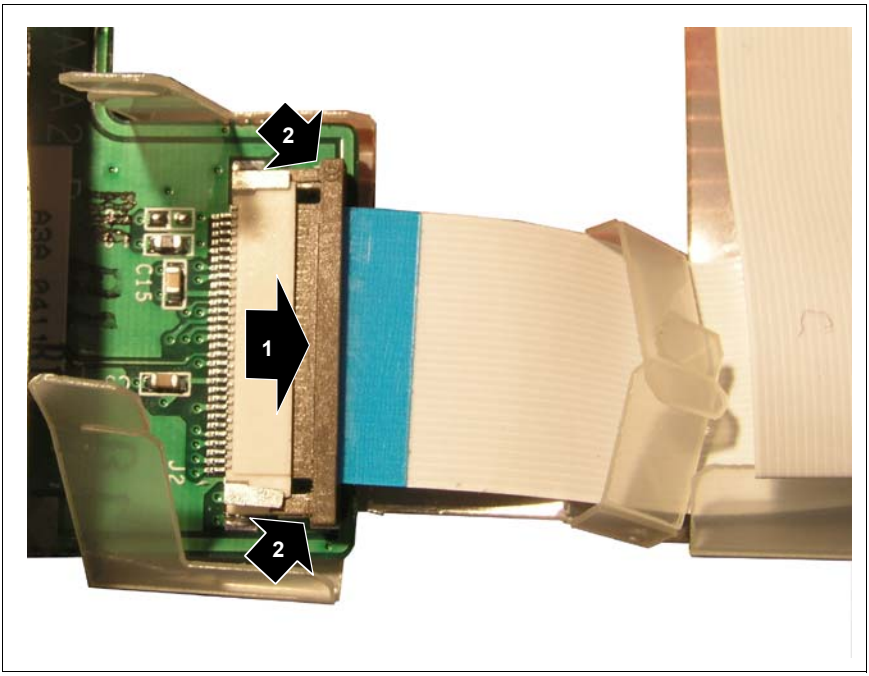


► Unplug the foil cable from the connector on the main board (1).

To disconnect the foil cable from the control panel board:



► Open the heat protection sleeve by unhooking the two ends in the direction of the arrows.



- ► Slide the fastening bracket of the connector on the control panel board in the direction of the arrow (1), pressing on the sides (2).
- ► Pull the cable with the heat protection sleeve off the control board panel.

Installing the control panel board

To install the control panel board, follow the above steps in reverse order.

4-way server blade: Recovering the server blade BIOS

This section describes how to recover the BIOS of the *4-way server blade* in the event of an error.

This procedure must only be used in the event of an error.

Requirements

– The blade server is connected to the mains.

– The *4-way server blade* is switched off.

Creating a BIOS flash diskette

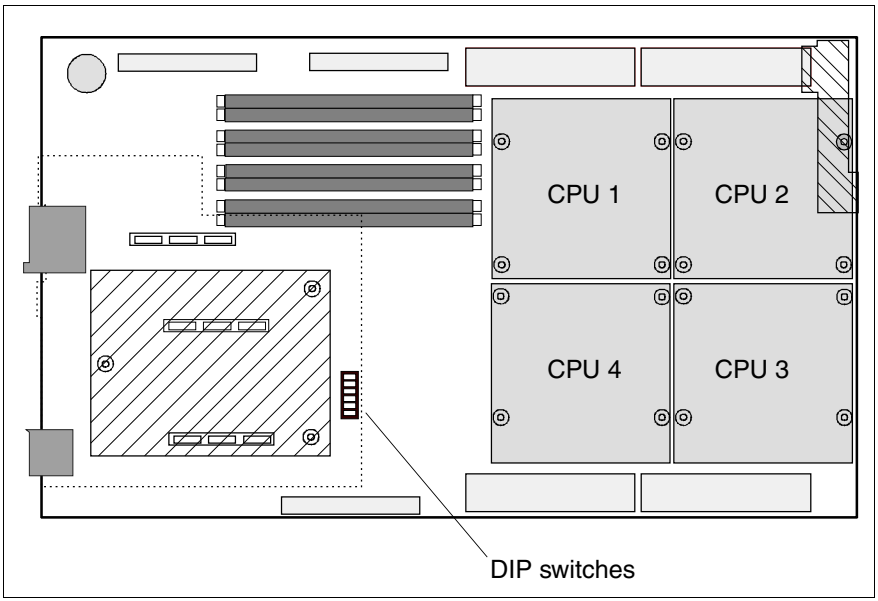
- Expand the ZIP archive file *s71xxx.zip* on your PC hard disk.

  The data for creating the *BIOS flash diskette* is contained in the software pool http://service.abg.fsc.net/support/softwareAssist.asp.

- Insert an empty diskette into the diskette drive.
- Run the *crisdisk* program and follow the instructions on the screen to create a *BIOS flash diskette*.

Recovering the server blade BIOS

- Connect the monitor, keyboard and mouse to the KVM connector on the back of the blade server chassis, see page 02-BX600-40.
- Remove the *4-way server blade* from the blade server chassis (see page 02-BX600-174) and open it (see page 02-BX600-175).



- Set switch 8 of the DIP switches on the system board to `ON`.
- Close the cover of the *4-way server blade* (see page 02-BX600-175) and reinstall it in the blade server chassis (see page 02-BX600-174).

- Insert the BIOS flash diskette in a USB diskette drive and connect the diskette drive to the USB port of the *4-way server blade* using the USB breakout cable (see page 02-BX600-170).
- Press the KVM button on the control panel of the *4-way server blade* (see page 02-BX600-170) to switch the keyboard, mouse and monitor of the KVM blade to the server blade.
- Switch on the *4-way server blade* (see page 02-BX600-37).

After a short beep, the BIOS is uploaded. The status of the flash process is displayed on the KVM console. After the flash is completed, instructions are displayed for the following procedure:

- Switch off the *4-way server blade*.
- Remove the *4-way server blade* and open it.
- Set switch 8 of the DIP switches on the system board back to OFF.
- Close the *4-way server blade* and reinstall it.

Now you can reactivate the *4-way server blade*.

Update revision 11.2004

The PRIMERGY BX600 blade server and its server blades are identified as follows:

New identifier	Old identifier
PRIMERGY BX600	PRIMERGY BX600 blade server (system unit, „Z-Box“)
PRIMERGY BX620	PRIMERGY BX600 2-way server blade (dual blade)
PRIMERGY BX620 S2	PRIMERGY BX600 2-way server bladeS2 (dual blade S2)
PRIMERGY BX660	PRIMERGY BX600 4-way server blade (quad blade)

Contents

– Gigabit Ethernet pass-thru blade
see page 02-BX600-194

– PRIMERGY BX620 S2
see page 02-BX600-200

– PRIMERGY BX620 S2: Performance features
see page 02-BX600-200

– PRIMERGY BX620 S2: Product designations
see page 02-BX600-201

– PRIMERGY BX620 S2: Operating systems
see page 02-BX600-206

– PRIMERGY BX620 S2: Software support
see page 02-BX600-207

– PRIMERGY BX620 S2: Mechanical specifications and weight
see page 02-BX600-207

– PRIMERGY BX620 S2: Control and display elements
see page 02-BX600-207

– PRIMERGY BX620 S2: Spare parts and add-on modules
see page 02-BX600-208

– Installing and removing a PRIMERGY BX620 S2
see page 02-BX600-208

- Opening a PRIMERGY BX620 S2
  see page 02-BX600-208
- PRIMERGY BX620 S2: Diagnostics LEDs
  see page 02-BX600-209
- PRIMERGY BX620 S2: Rules for fitting memory modules
  see page 02-BX600-210
- PRIMERGY BX620 S2: Installing/removing processors
  see page 02-BX600-211
- PRIMERGY BX620 S2: Replacing the lithium battery
  see page 02-BX600-211
- PRIMERGY BX620 S2: Optional I/O module
  see page 02-BX600-212
- PRIMERGY BX620 S2: Recovering the server blade BIOS
  see page 02-BX600-214
- PRIMERGY BX660: Performance features
  see page 02-BX600-215
- PRIMERGY BX660: New product designations
  see page 02-BX600-215
- PRIMERGY BX660: New spare parts
  see page 02-BX600-215
- PRIMERGY BX660: Opening the server blade chassis
  see page 02-BX600-215
- PRIMERGY BX660: Mounting the I/O daughter card on the mainboard
  see page 02-BX600-219
- PRIMERGY BX660: Removing and mounting the extension board
  see page 02-BX600-221

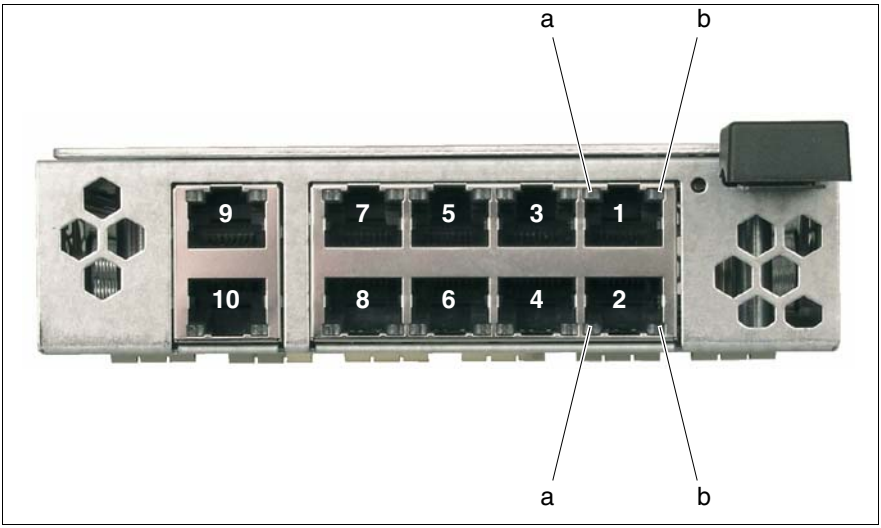
Gigabit Ethernet pass-thru blade

The Gigabit Ethernet pass-thru blade provides ten RJ45 ports for direct (“pass-thru”) connections to the server blades.

Gigabit Ethernet pass-thru blade

On the back of the PRIMERGY BX600 Blade Server there are slots for up to four Gigabit Ethernet pass-thru blades. Depending on the specific slot, an Gigabit Ethernet pass-thru blade establishes connections either to the onboard LAN controllers or to the optional gigabit Ethernet I/O modules (daughter cards) of the server blades. For information on the optional gigabit Ethernet I/O modules (daughter cards), see the operating guides for the relevant server blade types.

Control and connection panel



Control and connection panel of the Gigabit Ethernet pass-thru blade

The following display and control elements are available:

1 ... 10	**RJ45 connectors** The RJ45 connectors are assigned to the server blades in accordance with their slot numbering (see page 02-BX600-5).
a	**LAN activity indicator (orange LED)** Flashes orange: Active LAN connection Dark: Inactive LAN connection
b	**LAN connection indicator (green LED)** Glows green: LAN connection available Dark: No LAN connection

Port assignment of the Gigabit Ethernet pass-thru blades

On the back of the PRIMERGY BX600 Blade Server are four slots for Gigabit Ethernet pass-thru blades.

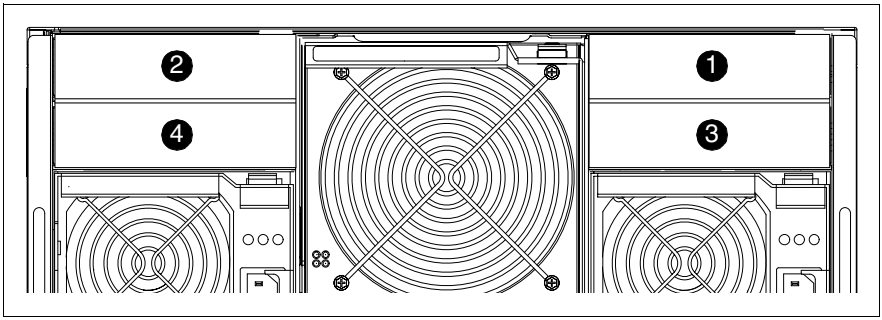


Figure 1: Slots for installing pass-thru blades

Slots 1 and 2 are connected to the onboard LAN controllers of the server blades.

Slots 1 and 2 can also accommodate switch blades for connecting the onboard LAN contollers of the server blades to the LAN, see page 02-BX600-43.

Slots 3 and 4 offer connections to the optional gigabit Ethernet I/O modules of the server blades.

If the server blades are to offer Fibre Channel functionality, an FC pass-thru blade must be installed in slot 3 and/or 4, see page 02-BX600-46.

It is not possible to operate both gigabit Ethernet I/O modules and Fibre Channel I/O modules in a PRIMERGY BX600 Blade Server.

The following configuration examples show the assignment of the Ethernet LAN ports of the pass-thru blades to the server blades.

Configuration with ten PRIMERGY BX620 S2 server blades

A PRIMERGY BX620 server blade offers an onboard LAN controller with two LAN channels and a slot for an optional gigabit Ethernet I/O module with two additional LAN channels.

The Gigabit Ethernet pass-thru blades in slots 1 and 2 provide connections to channels A and B of the onboard LAN controller of the server blade. The following figure shows the port assignment in a configuration with ten PRIMERGY BX620 server blades.

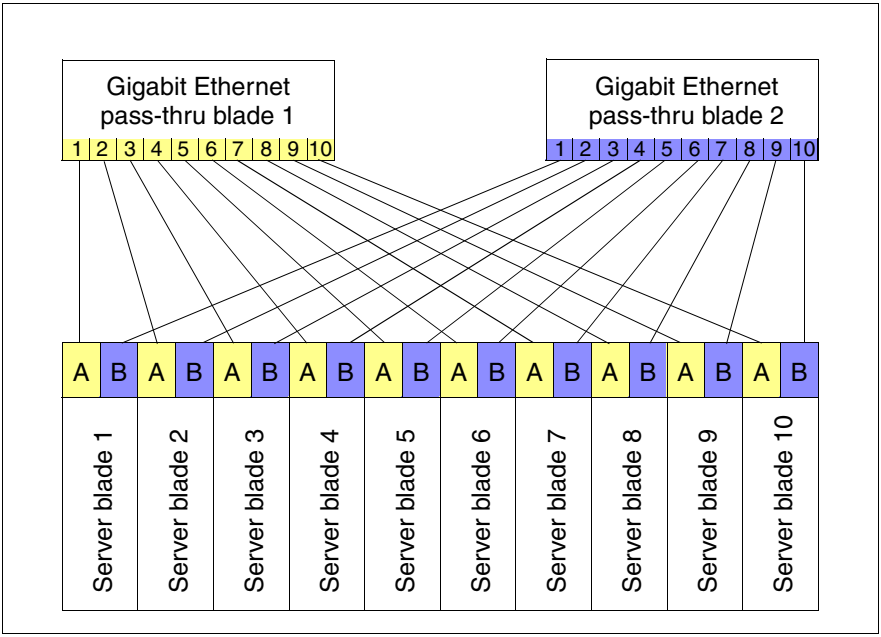

Gigabit Ethernet pass-thru blade 1
1 2 3 4 5 6 7 8 9 10
Gigabit Ethernet pass-thru blade 2
1 2 3 4 5 6 7 8 9 10
A B A B A B A B A B A B A B A B A B A B
Server blade 1
Server blade 2
Server blade 3
Server blade 4
Server blade 5
Server blade 6
Server blade 7
Server blade 8
Server blade 9
Server blade 10

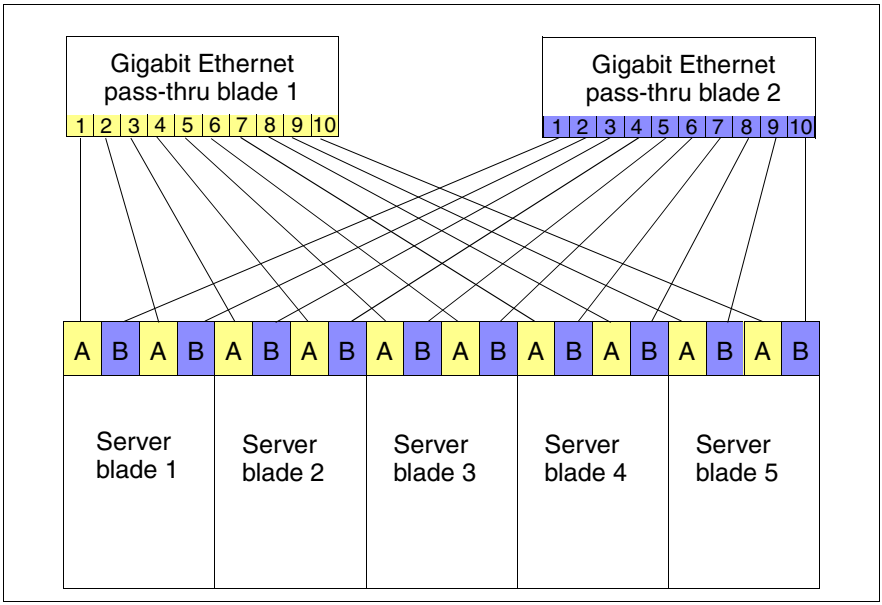
Figure 2: Ethernet port assignment with ten PRIMERGY BX620 server blades

The Gigabit Ethernet pass-thru blades in slots 3 and 4 provide connections to the A and B channels of the optional gigabit Ethernet I/O modules. The ports in a configuration with ten PRIMERGY BX620 server blades are assigned according to the same pattern.

Configuration with five PRIMERGY BX660 server blades

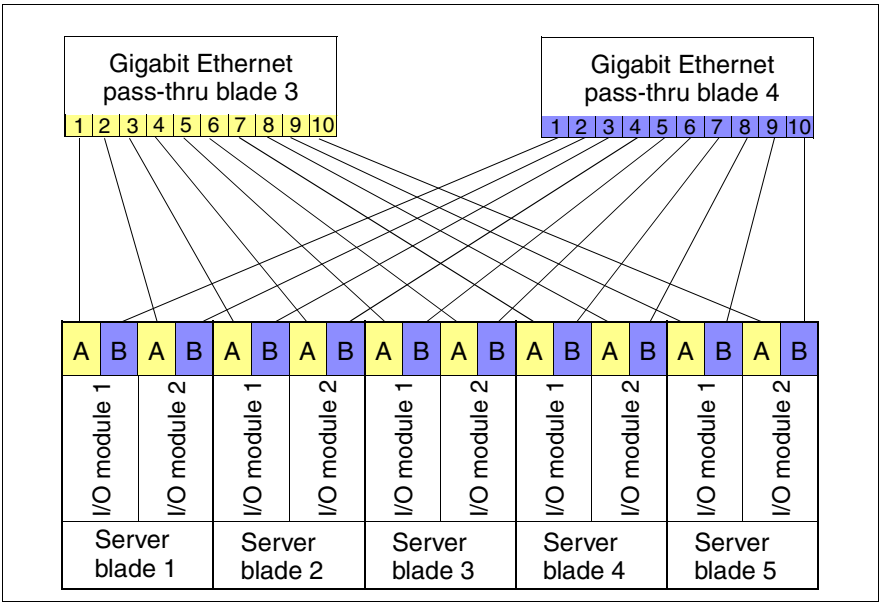
A PRIMERGY BX660 server blade offers two onboard LAN controllers with two LAN channels each, and two slots for optional gigabit Ethernet I/O modules with two additional LAN channels each.

The Gigabit Ethernet pass-thru blades in slots 1 and 2 provide connections to channels A and B of the onboard LAN controller of the server blade. The following figure shows the port assignment in a configuration with five PRIMERGY BX660 server blades.


Gigabit Ethernet pass-thru blade 1
1 2 3 4 5 6 7 8 9 10
Gigabit Ethernet pass-thru blade 2
1 2 3 4 5 6 7 8 9 10
A B A B A B A B A B A B A B A B A B A B
Server blade 1
Server blade 2
Server blade 3
Server blade 4
Server blade 5

Port assignment to the onboard LAN controller with five PRIMERGY BX660 server blades

The following figure illustrates the assignment of the LAN ports of the Gigabit Ethernet pass-thru blades in slots 3 and 4 to the channels of the gigabit Ethernet I/O modules (daughter cards) of the server blades in a configuration with five PRIMERGY BX660 server blades.


Gigabit Ethernet pass-thru blade 3
1 2 3 4 5 6 7 8 9 10
Gigabit Ethernet pass-thru blade 4
1 2 3 4 5 6 7 8 9 10
A B A B A B A B A B A B A B A B A B A B
I/O module 1
I/O module 2
Server blade 1
Server blade 2
Server blade 3
Server blade 4
Server blade 5

Port assignment to the gigabit Ethernet I/O modules with five PRIMERGY BX660 server blades

Replacing an Gigabit Ethernet pass-thru blade

An Gigabit Ethernet pass-thru blade is installed and removed in the same way as a Fibre Channel pass-thru blade, see page 02-BX600-110.

PRIMERGY BX620 S2

The following sections describe the components and the installation and removal procedures of the *PRIMERGY BX620 S2* server blade that differ from those of the *PRIMERGY BX620* server blade described in the previous sections.

PRIMERGY BX620 S2: Performance features

The *PRIMERGY BX620 S2* server blade combines the core components of a conventional server in a hot-swappable slide-in module with one or two Intel® Xeon™ processors, one or two SCSI hard disk drives and up to 12 GB RAM. The *PRIMERGY BX620 S2* occupies one slot in the blade server chassis. It can be installed in combination with other *PRIMERGY BX600* server blade models.

Processors	The *PRIMERGY BX620 S2* offers two processor sockets. The base configuration contains one processor. The second processor can be added later. A *PRIMERGY BX620 S2* can accommodate Intel® XEON® processors with 3.0 GHz, 3.2 GHz, 3.4 GHz or 3.6 GHz. Each CPU offers 1 MB second-level cache. It is not possible to use CPUs with different clock rates or cache capacities in the same *PRIMERGY BX620 S2*.
RAM	The *PRIMERGY BX620 S2* has three memory banks with two slots each. One memory bank can accommodate two DDR SDRAM modules with 1 GB, 2 GB or 4 GB combined memory. This allows a maximum memory configuration of 12 GB. ECC with memory scrubbing, a hot-spare memory bank and ChipKill™ are standard.
External connectors	Special connector for 2xUSB and VGA ports
LAN availability	A *PRIMERGY BX620 S2* offers an onboard LAN controller with two 1-Gigabit Ethernet channels and a slot for an optional I/O module with two extra 1-Gigabit Ethernet channels. The LAN connection can be implemented via the *switch blades* or via *Gigabit Ethernet pass-thru blades* on the back of the blade server system unit.

Fibre Channel	If an FC daughter card is installed, the *PRIMERGY BX620 S2* can be equipped with up to two 2-Gbit/sec Fibre Channel I/O ports. To enable use of the Fibre Channel functionality, at least one *FC pass-thru blade* must be installed in the blade server.
Graphics controller	Onboard graphics controller ATI Radeon 7000-M, 16 MB
Storage capacity	The *PRIMERGY BX620 S2* can be fitted with up to two 3.5“ SCA2 SCSI hard disk drives with a capacity of 18, 36, 73 GB (15,000 rpm) or 36, 73, 146 GB (10,000 rpm). This allows a maximum hard disk capacity of a server blade of 292 (2x146) GB in a RAID-0 configuration. Generally, however, the two disks are mirrored in a RAID-1 configuration. The *PRIMERGY BX620 S2* has a one-channel Ultra320 SCSI onboard controller with HostRAID functionality (RAID levels 0 and 1).
Security functions	Basic error recognition and correction in the main memory with ECC (ECC memory modules only). Password for system, setup and keyboard. Write protection for floppy disk drive.
Notification	Notification on system status, selection, hard disk activity, LAN connection status.
BIOS	AMI-BIOS, 8-Mbit boot block flash memory.

PRIMERGY BX620 S2: Product designations

Product	**Basic units: PRIMERGY BX620 S2**
	Features: – Supports dual Xeon processors – 6 memory slots (to be fitted in pairs), divided into 3 memory banks for a maximum of 12 GB DDR SDRAM – 2x onboard LAN 10/100/1000 Mbit/s (compatible with Broadcom 5703) – An onboard Ultra320 SCSI HostRAID controller (1 channel) for internal hard disks – Slot for installing an optional I/O module (FC daughter card or Gigabit Ethernet daughter card), requires at least one FC pass-thru blade or an Gigabit Ethernet pass-thru blade on the back of the blade server. – 2 slots for 3.5" SCSI hard disk modules (hot-plug) – Onboard graphics controller ATI Radeon 7000-M, 16 MB – Special connection (Y cable) with 2x USB and 1x VGA port.

Product	Basic units: PRIMERGY BX620 S2
S26361-K921-V211	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.0 GHz / 1 MB Second-Level Cache (SLC), 1 GB SDRAM
S26361-K921-V221	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.0 GHz / 1 MB Second-Level Cache (SLC), 2 GB SDRAM
S26361-K921-V231	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.0 GHz / 1 MB Second-Level Cache (SLC), 4 GB SDRAM
S26361-K921-V212	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.2 GHz / 1 MB Second-Level Cache (SLC), 1 GB SDRAM
S26361-K921-V222	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.2 GHz / 1 MB Second-Level Cache (SLC), 2 GB SDRAM
S26361-K921-V232	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.2 GHz / 1 MB Second-Level Cache (SLC), 4 GB SDRAM
S26361-K921-V214	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3,4 GHz / 1 MB Second Level Cache (SLC), 1 GB SDRAM
S26361-K921-V224	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3,4 GHz / 1 MB Second Level Cache (SLC), 2 GB SDRAM
S26361-K921-V234	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3,4 GHz / 1 MB Second Level Cache (SLC), 4 GB SDRAM
S26361-K921-V213	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.6 GHz / 1 MB Second-Level Cache (SLC), 1 GB SDRAM
S26361-K921-V223	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.6 GHz / 1 MB Second-Level Cache (SLC), 2 GB SDRAM
S26361-K921-V233	*PRIMERGY BX620 S2:* 1 CPU, Xeon 3.6 GHz / 1 MB Second-Level Cache (SLC), 4 GB SDRAM
S26361-F2749-E1	"Works installation": Service for mounting the server blade in the system unit. The BX600 Blade Server is delivered complete with installed and tested server blades. Min. 1x per system unit, max. 10x per system unit, max. 1x per server blade.
S26361-F2749-E2	Server blade packed/delivered individually, not installed in the BX600 Blade Server but tested and delivered separately. Max. 1x per server blade.

Product	Processor
	Two processor sockets are available. One socket is occupied in the base configuration. The sockets can be fitted with Intel Xeon (DP) processors. The second processor can also be installed later. The two processors must have the same clock rate and cache size. The dual-processor system requires a multi-processor-capable operating system.
S26361-F2549-E311	Xeon DP 3.0 GHz, 1 MB SLC with heat sink
S26361-F2549-E312	Xeon DP 3.2 GHz, 1 MB SLC with heat sink
S26361-F2549-E314	Xeon DP 3,4 GHz, 1 MB SLC with heat sink
S26361-F2549-E313	Xeon DP 3.6 GHz, 1 MB SLC with heat sink

Product	RAM
	– A *server blade* offers three memory banks for memory modules (6 slots, to be fitted in pairs). – These memory banks can be fitted with 1-GB, 2-GB and 4-GB DDR 2 400 SDRAM. – This allows a maximum memory configuration of 12 GB. **i** ECC with memory scrubbing, ChipKill and a hot-spare memory bank are standard with PRIMERGY BX600 server blades.
S26361-F3072-E521	1 GB RAM, PC2-3200 registered DDR2 400 RAM with ChipKill support, consisting of 2 modules, occupies one memory bank, max. 3 per server blade
S26361-F3072-E522	2 GB RAM, PC2-3200 registered DDR2 400 RAM with ChipKill support, consisting of 2 modules, occupies one memory bank, max. 3 per server blade
S26361-F3072-E523	4 GB RAM, PC2-3200 registered DDR2 400 RAM with ChipKill support, consisting of 2 modules, occupies one memory bank, max. 3 per server blade

Product	Hard disk drives
	– The 80-pin SCA hard disks are plugged into a directly connected 1-channel backplane. – If HostRAID functionality is used, the onboard LSI 1021 can be replaced during operation (hot replacement). **i** If the bottom SCSI hard disk bay is used for the PCI expansion module, only one SCSI hard disk can be installed.
S26361-F2764-E136	36 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade
S26361-F2764-E173	73 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade
S26361-F2764-E114	146 GB, 10000 rpm, <5.5 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade
S26361-F2764-E518	18 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade
S26361-F2764-E536	36 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade
S26361-F2764-E573	73 GB, 15000 rpm, <4 ms, Ultra 320 SCSI (320 MB/s), hot plug/hot replace, max. 2 per server blade

Product	Attachable drives / external devices
	The following devices can be attached to a *server blade* using a breakout cable.
S26361-F2609-L620	USB cable for CD-ROM drive
S26361-F3038-L200	Traveler III DVD-ROM drive
S26361-F264-L225	USB FDD
S26361-F280-V220	USB keyboard KBPC USB D
S26361-F317-L100	USB Optical Wheel Mouse

Product	**PCI options**
	– A PCI slot can be provided instead of the bottom hard disk bay. – A PCI slot is a short slot with full height. It offers PCI-X 64bit/100MHz. i This solution only allows one internal SCSI hard disk module per server blade.
S26361-F3022-E3	Carrier module for PCI slot, max. 1 per server blade
S26361-F3011-E1	Gigabit-Ethernet controller Dual 1000TX, Intel Pro/1000MT Dual Server Adapter, Adapter Teaming Support, PCI-X (PCI64/66), min. 163 mm, socket for RJ45 plug, max. 1 per server blade
S26361-F3090-E256	2-channel RAID controller Ultra320, LSI 320-2x, 256MB SDRAM ECC cache, without cable, max. 1 per server blade in slots 5 and 6.
S26361-F2399-E1	SCSI Ultra160 controller, Adaptec SCSI Card 29160, for accessible drives (PRIMERGY SX10), max. 1 per server blade in slots 5 and 6.

Product	**I/O module**
	– Each server blade offers one optional slot for an I/O module (Fibre Channel or Ethernet LAN). i To be able to use the additional I/O functionality, at least one FC pass-thru blade or Gigabit Ethernet pass-thru blade must be installed in the system.
S26361-F3023-E1	2Gbit/s FC I/O module with ISP2312 dual channel, 2Gbit/s PCI-X 133MHz, 3.3V signal voltage; max. 1x per server blade
S26361-F3111-E1	1Gbit/s Ethernet I/O module with 2 channels at 1Gbit/s PCI-X 133MHz, 3.3V signal voltage; max. 1x per server blade

PRIMERGY BX620 S2: Operating systems

Manufacturer	Operating system
Microsoft[1]	Windows 2000 Server
	Windows 2000 Advanced Server
	Windows 2003 Server Standard Edition
	Windows 2003 Server Enterprise Edition
	Windows 2003 Server Web Edition
Linux[1]	SuSE Linux Enterprise Server SuSE Linux Professional Linux Red Hat Enterprise Linux
PRIMECLUSTER[2]	Clustering Load Balancing

[1]Please read the ordering and release notes at http://extranet.fujitsu-siemens.com/primergy
[2]Please read the release notes in the PCL support matrix at http://extranet.fujitsu-siemens.com/primergy

PRIMERGY BX620 S2: Software support

The *PRIMERGY BX620 S2* supports the following software and firmware versions (and later):

ServerView	Version 3.0
RemoteView	Version 3.0
ServerStart	Version 5.411
ServerBooks[1]	Version 5.501
ServerSupport	Version 4.27 / 5.208

[1] Online available with V. 5.411 via http://manuals.fujitsu-siemens.com/primergyservers.html

PRIMERGY BX620 S2: Mechanical specifications and weight

Mechanical specifications

Width	286 mm
Installation depth	470 mm (520 mm incl. levers and plugs)
Height	43 mm (1 slot in blade server)

Weight

max. 7 kg (configuration-dependent)

PRIMERGY BX620 S2: Control and display elements

The *PRIMERGY BX620 S2* server blade has the same control and display elements as the *PRIMERGY BX620* server blade, see page 02-BX600-25.

PRIMERGY BX620 S2: Spare parts and add-on modules

The following spare parts and add-on modules are available for the *PRIMERGY BX620 S2* server blade:

PRIMERGY BX620 S2	A3C40060875
FC daughter card	A3C40052238
Gigabit Ethernet daughter card	A3C40060877
PCI expansion module kit	A3C40060879
Front panel kit	A3C40064208
CPU XEON 3.0GHz 1MB Second-Level Cache	A3C40060979
CPU XEON 3.2GHz 1MB Second-Level Cache	A3C40060981
CPU XEON 3,4GHz 1MB Second-Level cache	A3C40064254
CPU XEON 3.6GHz 1MB Second-Level Cache	A3C40060983
Coolermaster CPU heat sink	A3C40061373
Dummy heat sink	A3C40061375
Memory 1GB DDR2-400	A3C40057352
Memory 2GB DDR2-400	A3C40057353
Memory 4GB DDR2-400	A3C40057354

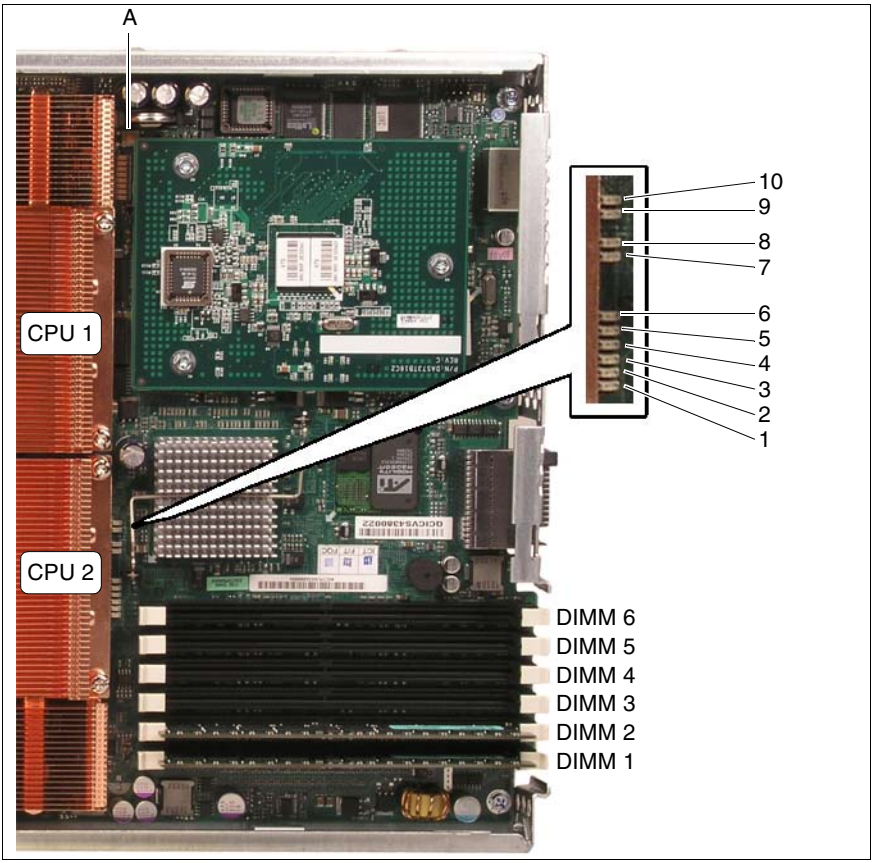
Installing and removing a PRIMERGY BX620 S2

The *PRIMERGY BX620 S2* is installed in the system unit of the PRIMERGY BX600 Blade Server and removed from it in the same way as the *PRIMERGY BX620 server blade*, see page 02-BX600-73.

Opening a PRIMERGY BX620 S2

The *PRIMERGY BX620 S2* server blade is opened in the same way as the *PRIMERGY BX620* server blade, see page 02-BX600-76.

PRIMERGY BX620 S2: Diagnostics LEDs

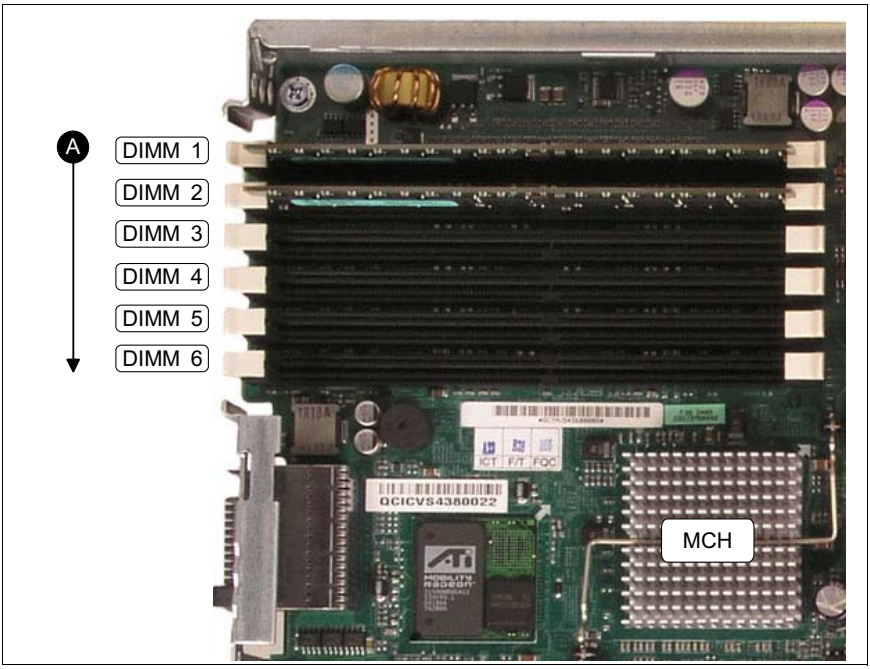


1	DIMM 1 error	2	DIMM 2 error
3	DIMM 3 error	4	DIMM 4 error
5	DIMM 5 error	6	DIMM 6 error
7	CPU 2 error	8	CPU 1 error
9	I/O daughter card error	10	PCI card error
A	Diagnostics button		

► Press the diagnostics button (A) to locate defective components via their glowing diagnostics LEDs.

PRIMERGY BX620 S2: Rules for fitting memory modules

Observe the following sequence when installing DDR2 400 SDRAM modules.



Fit the DIMM sockets in the order of their numbering. First fill the DIMM sockets that are furthest away from the MCH chip. If you are installing SDRAM modules with different capacities, the larger capacity modules must be installed in the slots closest to the MCH chip (higher numbers).

Example: Two 1-GB SDRAM modules and two 2-GB SDRAM modules with a total memory capacity of 6 GB are to be installed in a PRIMERGY BX620 S2. In this case, the 1-GB SDRAM modules must be installed in slots 1 and 2 and the 2-GB modules must be installed in slots 3 and 4.

The DDR SDRAM modules are installed and removed in the same way as in the *PRIMERGY BX620* server blade, see page 02-BX600-81.

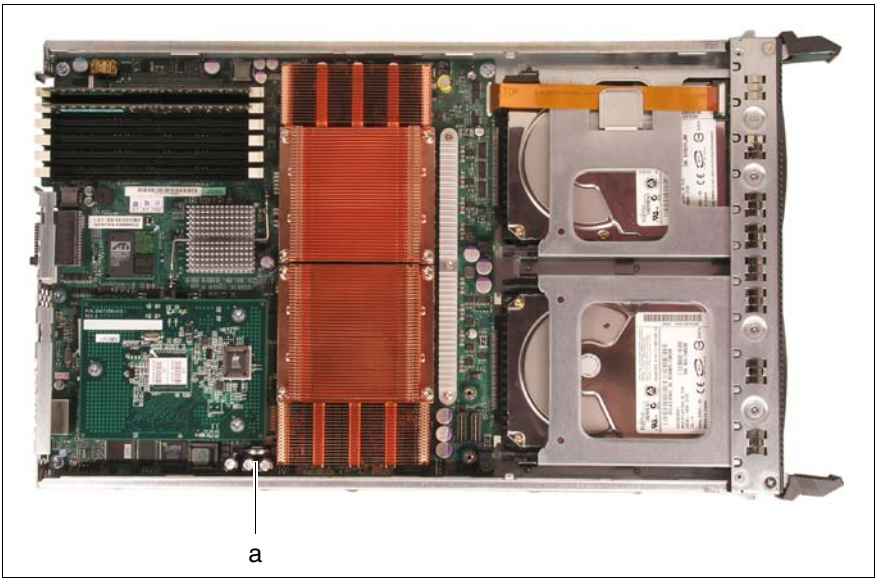
PRIMERGY BX620 S2: Installing/removing processors

The *PRIMERGY BX620 S2* offers two sockets for Intel Xeon CPUs. For available CPU types see page 02-BX600-203.

It is not possible to use CPUs with different clock rates or cache capacities in the same *PRIMERGY BX620 S2*.

The processors and heat sinks are installed and removed in the same way as in the *PRIMERGY BX620 server blade*, see page 02-BX600-84.

PRIMERGY BX620 S2: Replacing the lithium battery

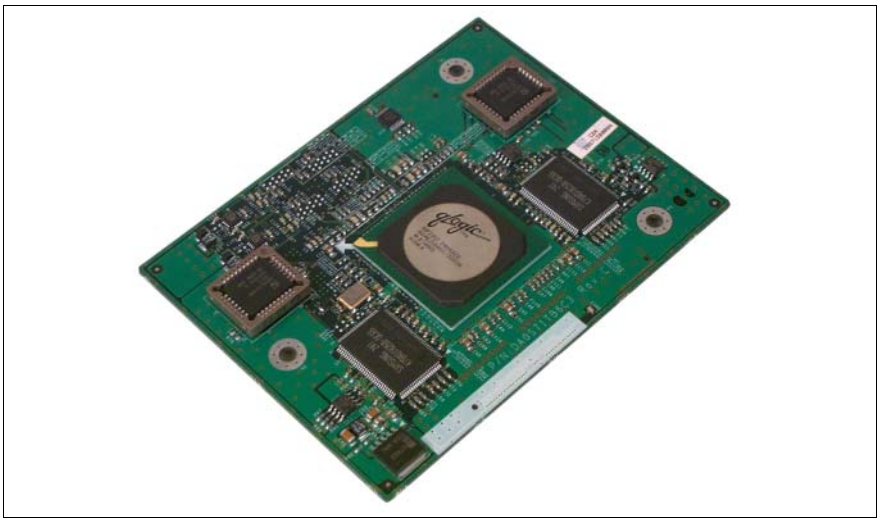


Position of the lithium battery in the *PRIMERGY BX620 S2*

The lithium battery of the *PRIMERGY BX620 S2* server blade is replaced in the same way as in the *PRIMERGY BX620* server blade, see page 02-BX600-88.

PRIMERGY BX620 S2: Optional I/O module

The *PRIMERGY BX620 S2* can be equipped with an FC I/O module or an additional gigabit Ethernet I/O module. For this purpose, the *PRIMERGY BX620 S2* offers a special PCI X 64-bit slot for an FC daughter card or an gigabit Ethernet daughter card.



FC daughter card

The FC daughter card provides two independent serial 2-GB FC ports.

Fibre Channel functionality requires at least one Fibre Channel pass-thru blade on the rear of the blade server, see page 02-BX600-110.

Gigabit Ethernet daughter card

The Gigabit Ethernet daughter card provides two 1-Gbit/s Ethernet ports.

i For these additional Ethernet ports to be connected, there must be at least one Gigabit Ethernet pass-thru blade or an additional switch blade on the rear of the blade server, see page 02-BX600-194.

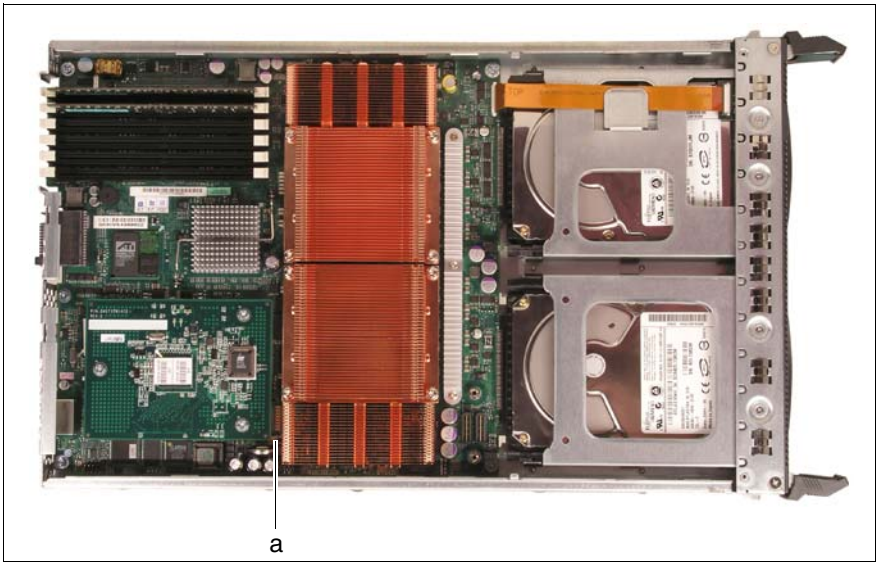
Installing an I/O daughter card

An I/O daughter card is installed in the *PRIMERGY BX620 S2* server blade in the same way as an FC daughter card in the *PRIMERGY BX620* server blade, see page 02-BX600-98.

PRIMERGY BX620 S2: Recovering the server blade BIOS

This procedure must only be used in the event of an error.

The BIOS recovery for the *PRIMERGY BX620 S2* server blade is performed in the same way as for the *PRIMERGY BX620* server blade, see page 02-BX600-102. The following figure shows the position of the DIP switches (a) on the system board of the *PRIMERGY BX620 S2*.



Position of the DIP switches in the *PRIMERGY BX620 S2*

PRIMERGY BX660: Performance features

New: Additional LAN ports via optional Gigabit Ethernet I/O modules.

LAN availability	The *PRIMERGY BX660* server blade offers two onboard LAN controllers, each with two 1-gigabit LAN channels, and two slots for optional I/O modules, each with two extra 1-gigabit LAN channels. The LAN connection can be implemented via the *switch blades* or via *Gigabit Ethernet pass-thru blades* on the back of the blade server system unit.

PRIMERGY BX660: New product designations

The slots for the optional I/O modules can be equipped with Gigabit Ethernet daughter cards (as an alternative to the Fibre Channel daughter cards).

Product	**I/O module**
	– The *PRIMERGY BX660* server blade offers two slots for optional I/O modules (Fibre Channel or Ethernet LAN). i To be able to use the additional I/O functionality, at least one FC pass-thru blade or Gigabit Ethernet pass-thru blade must be installed in the system.
S26361-F3111-E1	1Gbit/s Ethernet I/O module with 2 channels at 1Gbit/s PCI-X 133MHz, 3.3V signal voltage; max. 1x per server blade

PRIMERGY BX660: New spare parts

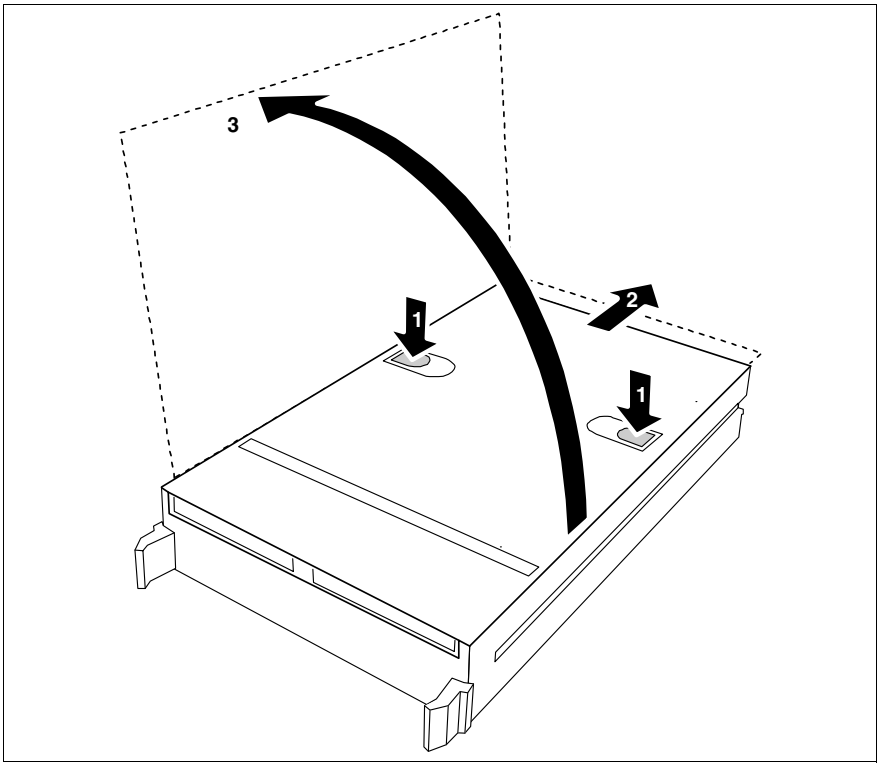
Gigabit Ethernet daughter card	A3C40060877

PRIMERGY BX660: Opening the server blade chassis

New: The server blade cover must be kept in a vertical position when removed, see page 02-BX600-218.

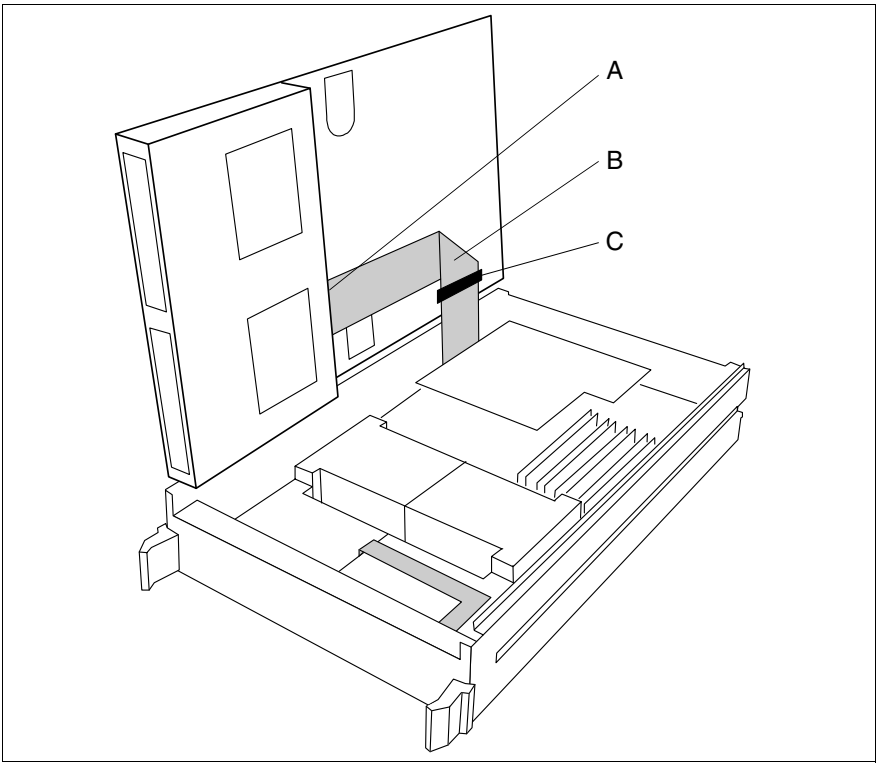
If hard disk modules are installed in the *4-way server blade*, these must be removed before the server blade is opened (see page 02-BX600-77).

The *4-way server blade* is extremely sensitive to electrostatic discharge and must therefore be handled with caution. Place the server blade on an insulated, antistatic surface before removing its cover. Never slide a server blade over a surface.

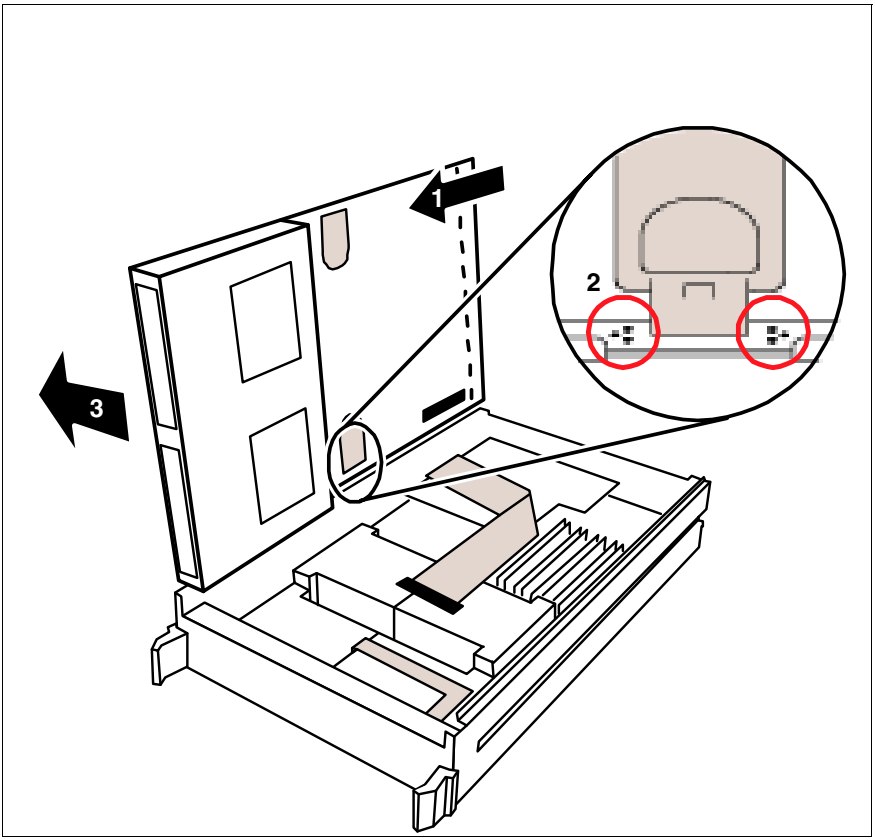


- ► Unlock the server blade cover by pressing on the touchpoints (1) and slide the cover back as far as possible (approx. 1.5 cm) in the direction of the arrow (2).
- ► Lift the cover up to the left into the vertical locking position (3).

Do not push the cover further than the vertical locking position, as this may damage the mechanical elements of the server blade chassis.



► Open the cable guide clip (C) and disconnect the plug of the ribbon cable (B) from the socket on the SCSI backplane (A).

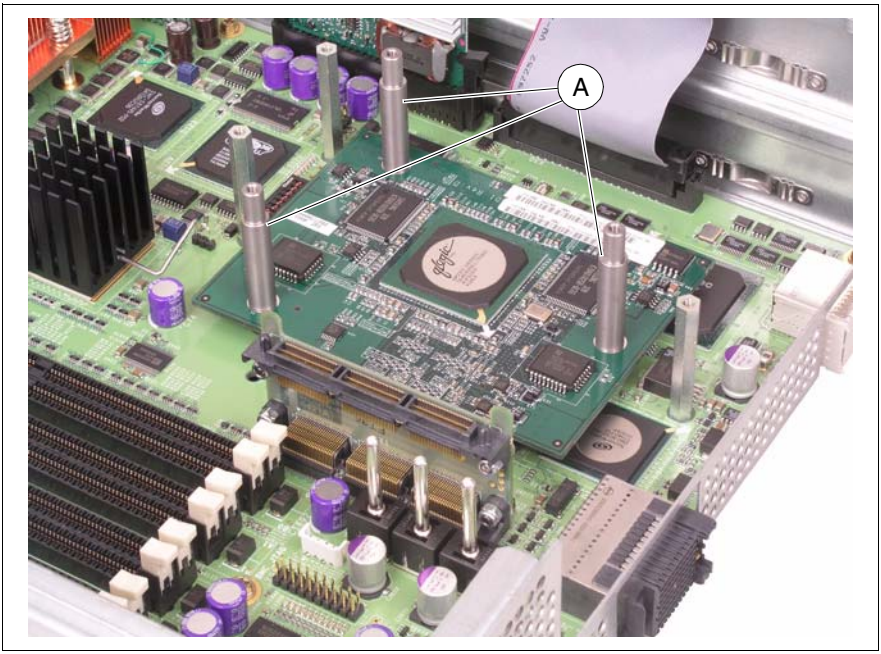


- Move the server blade cover in the direction of the arrow (1) until the positioning holes (2) are placed as shown.
- Remove the top cover completely to the left (3) holding it in a vertical position.

To close the *4-way server blade*, follow the above steps in reverse order.

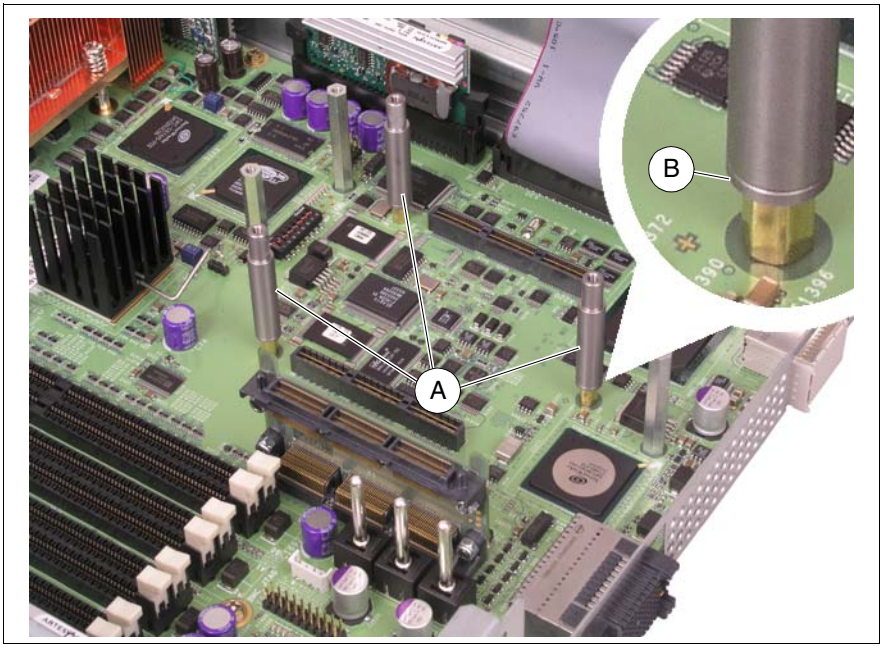
PRIMERGY BX660: Mounting the I/O daughter card on the mainboard

New: The I/O daughter card is attached to the mainboard with standoffs.



The daughter card is attached with the three standoffs (A), which are also used to attach the daughter card to the extension board.

If there is no daughter card mounted on the mainboard, distance washers (B) the same height as a daughter card must be placed under the standoffs (A), see figure below.

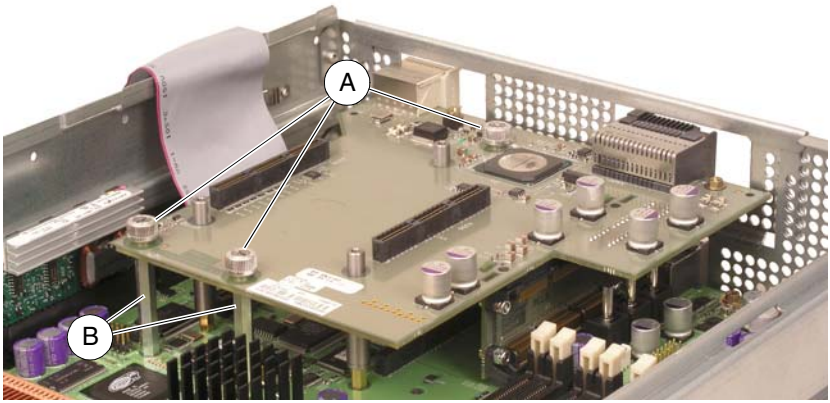


PRIMERGY BX660: Removing and mounting the extension board

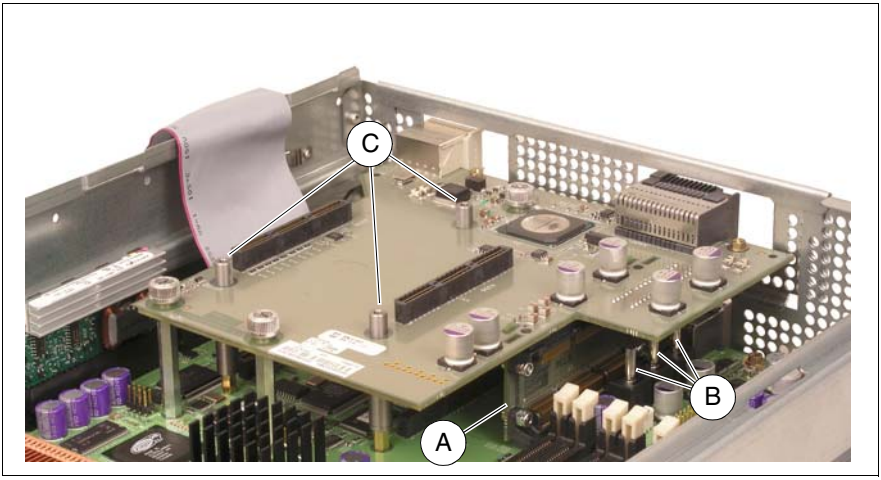
New: Attachment of the extension board in the *PRIMERGY BX660* server blade.

Removing the extension board

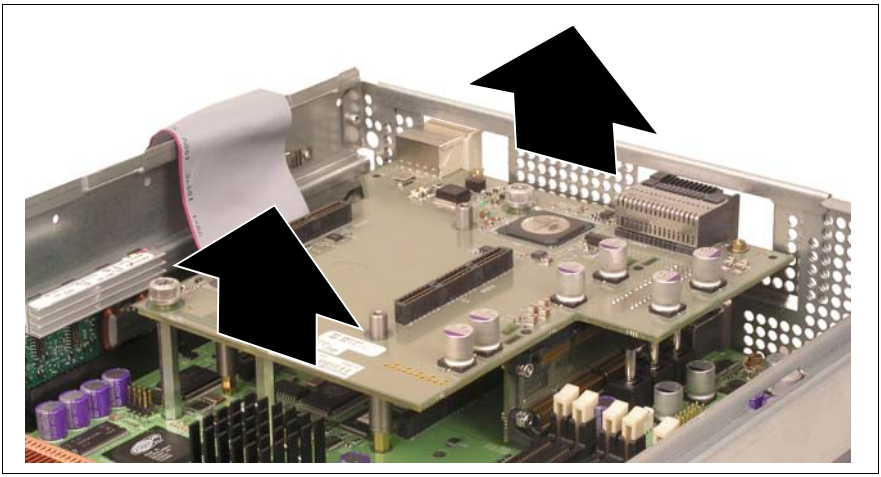
If an I/O daughter card is mounted on the extension board, this daughter card must be detached before the extension board is removed.



► Undo the knurled screws (A) fastening the extension board to the pin nuts (B).



► Gently rock the extension board to loosen it from the riser card (A), from the three power connection pins (B) and from the standoffs (C).



► Lift the extension board up and out of the server blade chassis, keeping it horizontal.

To install the extension board, follow the above steps in reverse order.

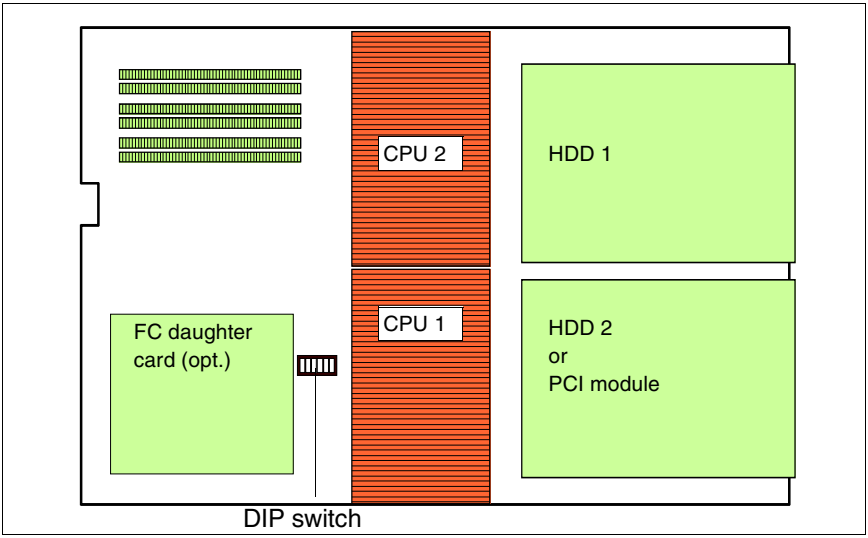
Update revision 03.2006

Contents

– PRIMERGY BX620: Settings with DIP switches
see page 02-BX600-224

– PRIMERGY BX620 S2: Settings with DIP switches
see page 02-BX600-226

PRIMERGY BX620: Settings with DIP switches



The system board is supplied with the following DIP switch settings:

Switch	**Function**	Default
1	Clear password	OFF
2	Clear CMOS	OFF
3	Recover BIOS	OFF
4	SCSI EEPROM switch	ON
5	KME controller switch	ON
6	KME controller switch	ON

Switch 1
- ON Clear password enabled
- OFF Clear password disabled

Switch 2
- ON Clear CMOS enabled
- OFF Clear CMOS disabled

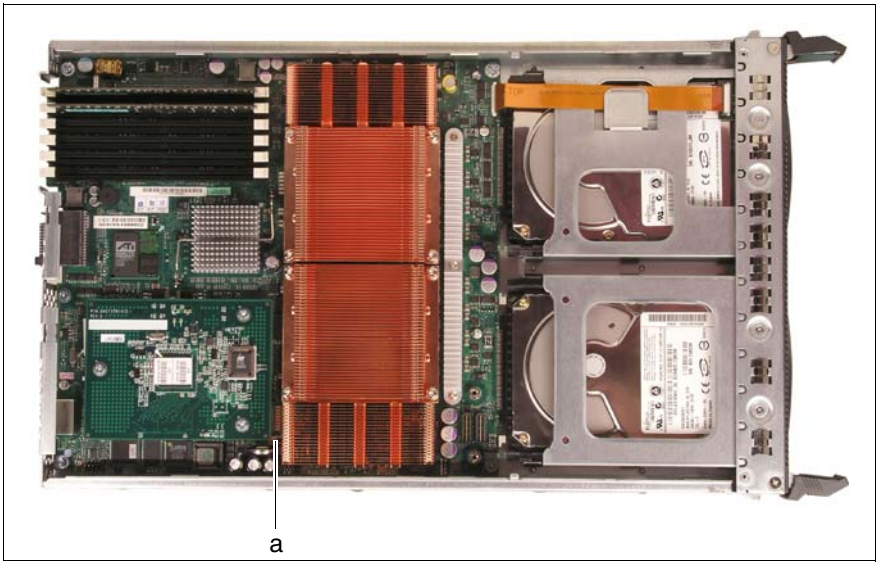
Switch 3
- ON System BIOS recovery enabled
- OFF Normal boot

Switch 4
- ON SCSI EEPROM is not programmable
- OFF SCSI EEPROM is programmable

Switch 5
- ON Keyboard and mouse controller is not programmable
- OFF Keyboard and mouse controller is programmable

Switch 6
- ON VDD power for KME controller equal VCC5_SUS
- OFF No VDD power for KME controller

PRIMERGY BX620 S2: Settings with DIP switches



The system board is supplied with the following DIP switch settings:

Switch	Function	Default
1	Clear password	OFF
2	Clear CMOS	OFF
3	System BIOS recovery	OFF
4	Not used	OFF
5	KME controller switch	ON
6	KME controller switch	ON

Switch 1
- ON Clear password enabled
- OFF Clear password disabled

Switch 2
- ON Clear CMOS enabled
- OFF Clear CMOS disabled

Switch 3
- ON System BIOS recovery enabled
- OFF Normal boot

Switch 4
- Not used

Switch 5
- ON Keyboard and mouse controller is not programmable
- OFF Keyboard and mouse controller is programmable

Switch 6
- ON Keyboard and mouse controller is not programmable
- OFF Keyboard and mouse controller is programmable

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